Access DB# 123237

SEARCH REQUEST FORM

Scientific and Technical Information Center

Requester's Full Name: Thomas Parsons Examiner # : 74969 Date: 5/28/04
Art Unit: 1745 Phone Number ~~30~~ 272-1290 Serial Number: 09/735,260
Mail Box and Bldg/Room Location: REM 6B75 Results Format Preferred (circle): PAPER DISK E-MAIL

If more than one search is submitted, please prioritize searches in order of need.

****

Please provide a detailed statement of the search topic, and describe as specifically as possible the subject matter to be searched. Include the elected species or structures, keywords, synonyms, acronyms, and registry numbers, and combine with the concept or utility of the invention. Define any terms that may have a special meaning. Give examples or relevant citations, authors, etc. if known. Please attach a copy of the cover sheet, pertinent claims, and abstract.

Title of Invention: Device and Method to transmit Waste Heat or thermal Pollution to Deep Space

Inventors (please provide full names): Ronald Parise

Earliest Priority Filing Date: 12/2000

**For Sequence Searches Only* Please include all pertinent information (parent, child, divisional, or issued patent numbers) along with the appropriate serial number.*

Search claims 1, 7 + 8 (attached)

****

STAFF USE ONLY	**Type of Search**	**Vendors and cost where applicable**
Searcher:	NA Sequence (#)	STN
Searcher Phone #:	AA Sequence (#)	Dialog
Searcher Location:	Structure (#)	Questel/Orbit
Date Searcher Picked Up:	Bibliographic	Dr.Link
Date Completed:	Litigation	Lexis/Nexis
Searcher Prep & Review Time:	Fulltext	Sequence Systems
Clerical Prep Time:	Patent Family	WWW/Internet
Online Time:	Other	Other (specify)

PTO-1590 (8-01)

STIC Search Report
EIC 1700

USPTO

STIC Database Tracking Number: 123237

TO: Thomas Parsons
Location: REM 6B75
Art Unit : 1745
June 7, 2004

Case Serial Number: 09/735260

From: Barba Koroma
Location: EIC 1700
REM EO4 A30
Phone: 571 272 2546

barba.koroma@uspto.gov

Search Notes

Examiner Parsons,
Please find attached results of the search you requested. Various components of the invention as spelt out in the claims and search request form were searched in multiple databases.

For your convenience, titles of hits have been listed to help you peruse the results set quickly. This is followed by a detailed printout of records.

Please let me know if you have any questions.
Thanks.

FILE COVERS 1907 - 7 Jun 2004 VOL 140 ISS 24
FILE LAST UPDATED: 6 Jun 2004 (20040606/ED)

This file contains CAS Registry Numbers for easy and accurate substance identification.

```
=> file wpix
COST IN U.S. DOLLARS                               SINCE FILE     TOTAL
                                                        ENTRY   SESSION
FULL ESTIMATED COST                                      0.44

DISCOUNT AMOUNTS (FOR QUALIFYING ACCOUNTS)         SINCE FILE     TOTAL
                                                        ENTRY   SESSION
CA SUBSCRIBER PRICE                                      0.00     -0.69
```

FILE 'WPIX' ENTERED AT 16:51:32 ON 07 JUN 2004

FILE LAST UPDATED: 3 JUN 2004 <20040603/UP>
MOST RECENT DERWENT UPDATE: 200435 <200435/DW>
DERWENT WORLD PATENTS INDEX SUBSCRIBER FILE, COVERS 1963 TO DATE

>>> FOR A COPY OF THE DERWENT WORLD PATENTS INDEX STN USER GUIDE, PLEASE VISIT:
http://www.stn-international.de/training_center/patents/stn_guide.pdf <<<

>>> FOR DETAILS OF THE PATENTS COVERED IN CURRENT UPDATES, SEE
http://thomsonderwent.com/coverage/latestupdates/ <<<

>>> FOR INFORMATION ON ALL DERWENT WORLD PATENTS INDEX USER GUIDES, PLEASE VISIT:
http://thomsonderwent.com/support/userguides/ <<<

>>> NEW! FAST-ALERTING ACCESS TO NEWLY-PUBLISHED PATENT DOCUMENTATION NOW AVAILABLE IN DERWENT WORLD PATENTS INDEX FIRST VIEW - FILE WPIFV. FREE CONNECT HOUR UNTIL 1 MAY 2004. FOR FURTHER DETAILS: http://www.thomsonderwent.com/dwpifv <<<

>>> NEW! IMPROVE YOUR LITIGATION CHECKING AND INFRINGEMENT MONITORING WITH LITALERT. FIRST ACCESS TO RECORDS OF IP LAWSUITS FILED IN THE 94 US DISTRICT COURTS SINCE 1973. FOR FURTHER DETAILS:
http://www.thomsonscientific.com/litalert <<<

>>> THE DISPLAY LAYOUT HAS BEEN CHANGED TO ACCOMODATE THE NEW FORMAT GERMAN PATENT APPLICATION AND PUBLICATION

```
=> file reg
COST IN U.S. DOLLARS                              SINCE FILE      TOTAL
                                                       ENTRY    SESSION
FULL ESTIMATED COST                                    19.32

DISCOUNT AMOUNTS (FOR QUALIFYING ACCOUNTS)        SINCE FILE      TOTAL
                                                       ENTRY    SESSION
CA SUBSCRIBER PRICE                                     0.00      -0.69
```

FILE 'REGISTRY' ENTERED AT 16:51:23 ON 07 JUN 2004
USE IS SUBJECT TO THE TERMS OF YOUR STN CUSTOMER AGREEMENT.
PLEASE SEE "HELP USAGETERMS" FOR DETAILS.

Property values tagged with IC are from the ZIC/VINITI data file
provided by InfoChem.

STRUCTURE FILE UPDATES: 6 JUN 2004   HIGHEST RN 690209-28-0
DICTIONARY FILE UPDATES: 6 JUN 2004   HIGHEST RN 690209-28-0

TSCA INFORMATION NOW CURRENT THROUGH JANUARY 6, 2004

Please note that search-term pricing does apply when
conducting SmartSELECT searches.

Crossover limits have been increased. See HELP CROSSOVER for details.

Experimental and calculated property data are now available. For more
information enter HELP PROP at an arrow prompt in the file or refer
to the file summary sheet on the web at:
http://www.cas.org/ONLINE/DBSS/registryss.html

```
=> file caplus
COST IN U.S. DOLLARS                              SINCE FILE      TOTAL
                                                       ENTRY    SESSION
FULL ESTIMATED COST                                     0.42

DISCOUNT AMOUNTS (FOR QUALIFYING ACCOUNTS)        SINCE FILE      TOTAL
                                                       ENTRY    SESSION
CA SUBSCRIBER PRICE                                     0.00      -0.69
```

FILE 'CAPLUS' ENTERED AT 16:51:29 ON 07 JUN 2004
USE IS SUBJECT TO THE TERMS OF YOUR STN CUSTOMER AGREEMENT.
PLEASE SEE "HELP USAGETERMS" FOR DETAILS.

```
    NUMBERS. SEE ALSO:
    http://www.stn-international.de/archive/stnews/news0104.pdf <<<

>>> SINCE THE FILE HAD NOT BEEN UPDATED BETWEEN APRIL 12-16
    THERE WAS NO WEEKLY SDI RUN  <<<

=> d que
L1             2 SEA FILE=CAPLUS ABB=ON  PLU=ON  US2000-735260/PRN,AP
L2        110737 SEA FILE=CAPLUS ABB=ON  PLU=ON  (RADIAT? OR REFLECT? OR
                 DEFLECT? OR BOUNCE? OR DIRECT?)(5A)(ENERGY? OR THERMAL ENERGY
                 OR HEAT? OR HIGH(4A)TEMP?)
L3            98 SEA FILE=CAPLUS ABB=ON  PLU=ON  L2 AND (OUTER OR DEEP?)(5A)SPAC
                 E
L4        122797 SEA FILE=CAPLUS ABB=ON  PLU=ON  (RADIAT? OR REFLECT? OR
                 DEFLECT? OR BOUNCE? OR DIRECT? OR TRANSM?)(5A)(ENERGY? OR
                 THERMAL ENERGY OR HEAT? OR HIGH(4A)TEMP?)
L5          4991 SEA FILE=CAPLUS ABB=ON  PLU=ON  L4 AND ((OUTER OR DEEP?)(5A)SPA
                 CE OR SPACE)
L6          9169 SEA FILE=CAPLUS ABB=ON  PLU=ON  L5 AND (WASTE? OR EXCESS? OR
                 LOSS OR LOST)(5A)(HEAT? OR OVERHEAT?) OR (GLOBAL? OR EARTH)(4A)
                 (WARM? OR HEAT?)
L7           189 SEA FILE=CAPLUS ABB=ON  PLU=ON  L6 AND SURFACE?(5A)(EARTH OR
                 PLANET)
L8          2037 SEA FILE=CAPLUS ABB=ON  PLU=ON  GREENHOUSE? AND (L1 OR L2 OR
                 L3 OR L4 OR L5 OR L6 OR L7)
L9           470 SEA FILE=CAPLUS ABB=ON  PLU=ON  (L7 OR L8) AND (DEVICE? OR
                 SURFACE?)
L10           11 SEA FILE=CAPLUS ABB=ON  PLU=ON  L9 AND ?POLYMER?
L11            1 SEA FILE=REGISTRY ABB=ON  PLU=ON  CARBON/CN
L12            1 SEA FILE=REGISTRY ABB=ON  PLU=ON  ACETYLENE/CN
L13            1 SEA FILE=REGISTRY ABB=ON  PLU=ON  CAMPHOR/CN
L14            1 SEA FILE=REGISTRY ABB=ON  PLU=ON  "ZINC SULFIDE"/CN
L16            1 SEA FILE=REGISTRY ABB=ON  PLU=ON  "SILVER CHLORIDE"/CN
L17            1 SEA FILE=REGISTRY ABB=ON  PLU=ON  "POTASSIUM CHLORIDE"/CN
L18            1 SEA FILE=REGISTRY ABB=ON  PLU=ON  "ZINC SELENIDE"/CN
L19            7 SEA FILE=REGISTRY ABB=ON  PLU=ON  (L11 OR L12 OR L13 OR L14)
                 OR (L16 OR L17 OR L18)
L20       421718 SEA FILE=CAPLUS ABB=ON  PLU=ON  L19
L32          135 SEA FILE=CAPLUS ABB=ON  PLU=ON  L5 AND L20
L33          103 SEA FILE=CAPLUS ABB=ON  PLU=ON  (L7 OR L8 OR L9) AND L20
L34          238 SEA FILE=CAPLUS ABB=ON  PLU=ON  L32 OR L33
L35           27 SEA FILE=CAPLUS ABB=ON  PLU=ON  L34 AND (DEVICE OR DEV/RL)
L39         8951 SEA FILE=CAPLUS ABB=ON  PLU=ON  (GLOBAL? OR EARTH)(4A)(WARM?
                 OR HEAT?) AND (L2 OR L3 OR L4 OR L5 OR L6 OR L7 OR L8 OR L9 OR
                 L10)
L41          217 SEA FILE=CAPLUS ABB=ON  PLU=ON  DEVICE AND L39
L44            7 SEA FILE=CAPLUS ABB=ON  PLU=ON  L41 AND L20
L46           32 SEA FILE=CAPLUS ABB=ON  PLU=ON  L35 OR L44
L47            3 SEA FILE=CAPLUS ABB=ON  PLU=ON  ATMOSPHERE(4A)TRANSPAREN? AND
                 (L46 OR L41 OR L39)
L48           35 SEA FILE=CAPLUS ABB=ON  PLU=ON  L46 OR L47
L55        11796 SEA FILE=CAPLUS ABB=ON  PLU=ON  (L2 OR L3 OR L4 OR L5 OR L6 OR
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                 L7 OR L8 OR L9) AND (L20 OR CARBON OR ACETYLENE OR C2H2 OR
                 SOOT OR ZINC SULFIDE OR ZNS OR AGCL OR SILVER CHLORIDE OR
                 ZINCE SELENIDE OR ZNSE OR POTASSIUM CHLORIDE OR KCL)
L56         1278 SEA FILE=CAPLUS ABB=ON  PLU=ON  L55 AND (DEVICE OR DEV/RL)
L57           45 SEA FILE=CAPLUS ABB=ON  PLU=ON  L56 AND (GLOBAL(3A)WARM? OR
                 GREENHOUSE?)
L58           77 SEA FILE=CAPLUS ABB=ON  PLU=ON  L48 OR L57
L59           30 SEA FILE=CAPLUS ABB=ON  PLU=ON  L58 AND SPACE?
L60         4839 SEA FILE=WPIX ABB=ON  PLU=ON  (L2 OR L3 OR L4 OR L5 OR L6 OR
                 L7 OR L8 OR L9) AND (CARBON OR ACETYLENE OR C2H2 OR SOOT OR
                 ZINC SULFIDE OR ZNS OR AGCL OR SILVER CHLORIDE OR ZINCE
                 SELENIDE OR ZNSE OR POTASSIUM CHLORIDE OR KCL)
L61          754 SEA FILE=WPIX ABB=ON  PLU=ON  L60 AND DEVICE?
L62          127 SEA FILE=WPIX ABB=ON  PLU=ON  L61 AND (GLOBAL(3A)WARM? OR
                 GREENHOUSE? OR WASTE(3A)HEAT OR SPACE)
L64           33 SEA FILE=WPIX ABB=ON  PLU=ON  L62 AND (REFLECT? OR DEFLECT? OR
                 TRANSFER? OR TRANSMI?)
L65           63 DUP REM L59 L64 (0 DUPLICATES REMOVED)
```

=> d ti 1-63
YOU HAVE REQUESTED DATA FROM FILE 'CAPLUS, WPIX' - CONTINUE? (Y)/N:y

L65 ANSWER 1 OF 63 CAPLUS COPYRIGHT 2004 ACS on STN
TI Processing apparatus for plasma etching of semiconductor or glass substrate, and maintenance method of same.

L65 ANSWER 2 OF 63 WPIX COPYRIGHT 2004 THOMSON DERWENT on STN
TI **Radiating thermal energy** from terrestrial position into **deep space** comprises arranging **thermal energy transmitting** material over terrestrial object and positioning **transmitting** material so that **transmitting surface** faces **deep space**
.

L65 ANSWER 3 OF 63 WPIX COPYRIGHT 2004 THOMSON DERWENT on STN
TI Molten steel production plant has at least three pairs of furnaces defining iron making loop and primary and secondary steel refining loops, molten metal **transferring device**, heat controlling **device**, removable lid, and lifting arrangement.

L65 ANSWER 4 OF 63 CAPLUS COPYRIGHT 2004 ACS on STN
TI Solar energy in progress and future research trends

L65 ANSWER 5 OF 63 WPIX COPYRIGHT 2004 THOMSON DERWENT on STN
TI Cooling optical fiber used to **transmit** information comprises contacting **heated** optical glass fiber with gaseous coolant free of helium, and subsequently contacting heated optical glass fiber with gaseous coolant containing helium.

L65 ANSWER 6 OF 63 WPIX COPYRIGHT 2004 THOMSON DERWENT on STN
TI Fixing **device** for image forming **device**, includes temperature sensor for detecting fixing unit temperature based on infrared radiation emitted from radiation layer.

L65 ANSWER 7 OF 63 WPIX COPYRIGHT 2004 THOMSON DERWENT on STN
TI Utilizaticn of aerodynamic interlacing process to produce chemical filter media involves forming filter media with laminated structure, bringing pre-formed media to heat treatment area, and bringing heat-treated media to cooling area.

L65 ANSWER 8 OF 63 WPIX COPYRIGHT 2004 THOMSON DERWENT on STN
TI Hard boron-containing material useful in manufacture of e.g. composites, grinding wheels, superconductors, thermoelectrics or radiation absorbers has a defined crystal structure.

L65 ANSWER 9 OF 63 CAPLUS COPYRIGHT 2004 ACS on STN
TI Free-**space**-wiring fabrication in nano-**space** by focused-ion-beam chemical vapor deposition

L65 ANSWER 10 OF 63 CAPLUS COPYRIGHT 2004 ACS on STN
TI Ablation radiation shields for nuclear fusion rockets

L65 ANSWER 11 OF 63 CAPLUS COPYRIGHT 2004 ACS on STN
TI Energy relaxation of quantum-well excitons during transport

L65 ANSWER 12 OF 63 CAPLUS COPYRIGHT 2004 ACS on STN
TI Method and **device** for heating gas with a thin layer of nuclear fuel, and **space** engine using such method

L65 ANSWER 13 OF 63 CAPLUS COPYRIGHT 2004 ACS on STN
TI Electric radiant **heater** with multiple plate **reflectors**

L65 ANSWER 14 OF 63 WPIX COPYRIGHT 2004 THOMSON DERWENT on STN
TI Testing of electronic component, involves exposing electronic component to inert test fluid which comprises non-flammable fluorinated ketone.

L65 ANSWER 15 OF 63 WPIX COPYRIGHT 2004 THOMSON DERWENT on STN
TI Apparatus for generating oxygen and removing **carbon** dioxide, has photosynthesis microorganism, culture medium for microorganism, and container provided with exhaust hole for receiving microorganism and culture medium.

L65 ANSWER 16 OF 63 WPIX COPYRIGHT 2004 THOMSON DERWENT on STN
TI Heat **transfer** fluid mixture for cooling items, e.g. optical fibers, consists of heavy gas consisting of nitrogen, argon, and/or **carbon** dioxide, and light gas consisting of hydrogen, and/or helium.

L65 ANSWER 17 OF 63 WPIX COPYRIGHT 2004 THOMSON DERWENT on STN
TI Heat spreader for dissipating semiconductor packages, comprises **carbon** fibers oriented with **carbon**/metal matrix

materials.

L65 ANSWER 18 OF 63 WPIX COPYRIGHT 2004 THOMSON DERWENT on STN
TI Optical storage **device**, has transparent capping layer with thickness that gives large beam spot size of convergent beam to make a power density that is less than threshold power density for mass **transfer** from medium to optical head.

L65 ANSWER 19 OF 63 WPIX COPYRIGHT 2004 THOMSON DERWENT on STN
TI Thermal harness for **space** craft and computer trays, comprises tubular heat conducting element(s) containing unidirectionally oriented thermal conductive graphite fiber bundles, enclosed within tubular braided sleeve.

L65 ANSWER 20 OF 63 CAPLUS COPYRIGHT 2004 ACS on STN
TI Energy relaxation during hot-exciton transport in quantum wells: Direct observation by spatially resolved phonon-sideband spectroscopy

L65 ANSWER 21 OF 63 CAPLUS COPYRIGHT 2004 ACS on STN
TI Optimization of the thermal regime of thermoelectric generators in **waste heat** recovery applications

L65 ANSWER 22 OF 63 CAPLUS COPYRIGHT 2004 ACS on STN
TI Development and testing of Goodrich 244 fire suppressant

L65 ANSWER 23 OF 63 CAPLUS COPYRIGHT 2004 ACS on STN
TI Low-orbit-environment protective coating for all-solid-state electrochromic surface **heat radiation** control **devices**

L65 ANSWER 24 OF 63 CAPLUS COPYRIGHT 2004 ACS on STN
TI Anti-**global warming device**

L65 ANSWER 25 OF 63 CAPLUS COPYRIGHT 2004 ACS on STN
TI Coating systems on **outer** plates of **space** shuttles for low **high-temperature radiation** ratio

L65 ANSWER 26 OF 63 WPIX COPYRIGHT 2004 THOMSON DERWENT on STN
TI Seed chuck for supporting a seed crystal for dipping in a hot melt, includes a shield that insulates the seed crystal from cooling, and heats the seed crystal with radiant energy emitted from the hot melt.

L65 ANSWER 27 OF 63 WPIX COPYRIGHT 2004 THOMSON DERWENT on STN
TI Optical recording medium comprising substrate, recording layer, protective layer and **heat radiating** layer.

L65 ANSWER 28 OF 63 CAPLUS COPYRIGHT 2004 ACS on STN
TI High temperature fracture toughness of a C/SiC (CVI) composite as used for screw joints in re-entry vehicles

L65 ANSWER 29 OF 63 CAPLUS COPYRIGHT 2004 ACS on STN
TI Development of the CO2 hermetic compressor

L65 ANSWER 30 OF 63 CAPLUS COPYRIGHT 2004 ACS on STN
TI Radiator for aerospace

L65 ANSWER 31 OF 63 WPIX COPYRIGHT 2004 THOMSON DERWENT on STN
TI Cleaning **device** for textile articles using a densified, liquid state treatment gas, comprises a condenser in **heat transmitting** contact with the evaporator chamber, and together with a compressor form a heat pump.

L65 ANSWER 32 OF 63 WPIX COPYRIGHT 2004 THOMSON DERWENT on STN
TI Potting of tubes to achieve a seal between the tubes' outside involves aligning the tubes in a housing, placing a spacer and layer of potting material, solidifying the latter and removing the former.

L65 ANSWER 33 OF 63 CAPLUS COPYRIGHT 2004 ACS on STN
TI Carbon-carbon thermal doublers for **spacecraft**

L65 ANSWER 34 OF 63 CAPLUS COPYRIGHT 2004 ACS on STN
TI Influence of electrons reflected from a target on the operation of diode and triode electron sources

L65 ANSWER 35 OF 63 WPIX COPYRIGHT 2004 THOMSON DERWENT on STN
TI Highly efficient, miniaturizable photosynthesis culture apparatus, for **carbon** dioxide fixation using particularly sunlight to remove waste **carbon** dioxide e.g. from thermal power plants.

L65 ANSWER 36 OF 63 WPIX COPYRIGHT 2004 THOMSON DERWENT on STN
TI Composite heat sink board structure for supporting electronic and microwave components in a chassis, e.g. in **space** applications.

L65 ANSWER 37 OF 63 CAPLUS COPYRIGHT 2004 ACS on STN
TI Enhanced thermal conductance of ORU radiant fin thermal interface using carbon brush materials

L65 ANSWER 38 OF 63 CAPLUS COPYRIGHT 2004 ACS on STN
TI The LET dependence of LiF:Mg,Ti dosemeters and its application for LET measurements in mixed radiation fields

L65 ANSWER 39 OF 63 CAPLUS COPYRIGHT 2004 ACS on STN
TI Study on CO2 removal technology from flue gas of thermal power plant by physical adsorption method

L65 ANSWER 40 OF 63 WPIX COPYRIGHT 2004 THOMSON DERWENT on STN
TI Tubular furnace for cracking hydrocarbon(s) in the presence of steam - comprising two layers of tubes and a thin body between the layers which restricts the flow of combustion gas from burners below the layers.

L65 ANSWER 41 OF 63 WPIX COPYRIGHT 2004 THOMSON DERWENT on STN
TI Heat and/or material exchanger using rotating **deflectors** to mix gases - where the **deflectors** are curved, folded, pleated or pierced sheets stacked in layers with the gases passing between them.

L65 ANSWER 42 OF 63 CAPLUS COPYRIGHT 2004 ACS on STN
TI Heat transfer in porous media

L65 ANSWER 43 OF 63 CAPLUS COPYRIGHT 2004 ACS on STN
TI Probability distributions of high-energy solar-heavy-ion fluxes from IMP-8: 1973-1996

L65 ANSWER 44 OF 63 WPIX COPYRIGHT 2004 THOMSON DERWENT on STN
TI Non-azeotropic refrigerant compsn. - containing **carbon** di oxide, fluoromethane, hydrofluorocarbon(s) or ether(s), and hydrocarbon(s).

L65 ANSWER 45 OF 63 CAPLUS COPYRIGHT 2004 ACS on STN
TI Measurement of the transmission of the UV/Ion shields for the AXAF high resolution camera

L65 ANSWER 46 OF 63 CAPLUS COPYRIGHT 2004 ACS on STN
TI Soft x-ray calibration of the Co/C multilayer mirrors for the Objective Crystal Spectrometer on the Spectrum Roentgen-Gamma satellite

L65 ANSWER 47 OF 63 WPIX COPYRIGHT 2004 THOMSON DERWENT on STN
TI Blood oxygenation system and reservoir - includes new blood defoaming and filtering chamber together with blood oxygenator and heat exchanger.

L65 ANSWER 48 OF 63 CAPLUS COPYRIGHT 2004 ACS on STN
TI Development of lightweight prototype carbon-carbon heat pipe with integral fins and metal foil liner

L65 ANSWER 49 OF 63 WPIX COPYRIGHT 2004 THOMSON DERWENT on STN
TI Combustion in heating furnace - involves mixing organic cpd. obtd. by reacting hydrogen and **carbon** di oxide with **carbon** -containing fuel.

L65 ANSWER 50 OF 63 CAPLUS COPYRIGHT 2004 ACS on STN
TI Carbon-carbon heat pipe testing and evaluation

L65 ANSWER 51 OF 63 WPIX COPYRIGHT 2004 THOMSON DERWENT on STN
TI Cooling **device** for heat treatment oven heated by external infrared source - operates by passing specified cooling fluid through **space** formed between two energy input port-holes in oven wall.

L65 ANSWER 52 OF 63 WPIX COPYRIGHT 2004 THOMSON DERWENT on STN
TI **Carbon** di oxide liquefying **device** - includes sealed vessel in which refrigerant is sealed, heat exchangers and LNG and **carbon** di oxide inlets and outlets.

L65 ANSWER 53 OF 63 WPIX COPYRIGHT 2004 THOMSON DERWENT on STN
TI Detector and localiser for low **energy radiation** emissions - has pick-up crystal cushioned by shock absorbing layer and sheathed by elastomeric retainer.

L65 ANSWER 54 OF 63 WPIX COPYRIGHT 2004 THOMSON DERWENT on STN

TI Cigarette substitute in shape of cigarette - has aerosol generation **device** enclosed in combustion element.

L65 ANSWER 55 OF 63 WPIX COPYRIGHT 2004 THOMSON DERWENT on STN
TI IR flexible guide mfr. e.g. for medical cutting tool - severing tube at spaced intervals along length without severing sleeve.

L65 ANSWER 56 OF 63 WPIX COPYRIGHT 2004 THOMSON DERWENT on STN
TI Surface temperature measurer for rotating roller - uses belt or drum **heated** by conduction and **radiating** to pyrometer.

L65 ANSWER 57 OF 63 WPIX COPYRIGHT 2004 THOMSON DERWENT on STN
TI Thermal electric generator with nuclear heat source - has core of ceramic material surrounded by **carbon** FRP cylindrical shield with thermo electric elements and insulating plates.

L65 ANSWER 58 OF 63 CAPLUS COPYRIGHT 2004 ACS on STN
TI Susceptor for chemical vapor deposition

L65 ANSWER 59 OF 63 WPIX COPYRIGHT 2004 THOMSON DERWENT on STN
TI Liquid cooling arrangement for high frequency solid state **device** - boils and condenses coolant so as to prevent amplitude modulation of signals in **device** due to boiling.

L65 ANSWER 60 OF 63 WPIX COPYRIGHT 2004 THOMSON DERWENT on STN
TI Fuel burning heater e.g. for vehicle - has combustion contained in small volume pinched neck cylinder located within inner expansion chamber.

L65 ANSWER 61 OF 63 WPIX COPYRIGHT 2004 THOMSON DERWENT on STN
TI Fuel cell power plant - in which heat generated in the cells is used to vaporise water in gases generated by the cells.

L65 ANSWER 62 OF 63 CAPLUS COPYRIGHT 2004 ACS on STN
TI System for protection from laser radiation

L65 ANSWER 63 OF 63 CAPLUS COPYRIGHT 2004 ACS on STN
TI Potassium chloride manufacture by the continuous process

=> d all 1-63 l65
YOU HAVE REQUESTED DATA FROM FILE 'CAPLUS, WPIX' - CONTINUE? (Y)/N:y

L65 ANSWER 1 OF 63 CAPLUS COPYRIGHT 2004 ACS on STN
AN 2004:252723 CAPLUS
DN 140:272827
ED Entered STN: 26 Mar 2004
TI Processing apparatus for plasma etching of semiconductor or glass substrate, and maintenance method of same.
IN Hirooka, Takaaki; Furuya, Masao; Tsutsumi, Shohei
PA Tokyo Electron Limited, Japan; Daikin Industries, Ltd.

SO PCT Int. Appl., 30 pp.
CODEN: PIXXD2
DT Patent
LA Japanese
IC ICM F25D017-02
ICS H01L021-302
CC 47-10 (Apparatus and Plant Equipment)
Section cross-reference(s): 74, 76
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	WO 2004025199	A1	20040325	WO 2003-JP11212	20030902

W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CC, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU

RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG

PRAI JP 2002-263761 A 20020910

AB An electrode temperature adjusting **device** for a processing apparatus that makes it possible to reduce the installation **space** and to achieve energy saving, and to prevent **global warming**, without using perfluorocarbon as refrigerant for a refrigerating circuit. An electrode temperature adjusting **device** for a processing apparatus is characterized by comprising a refrigerating circuit that consists of a compressor, a condenser, an expansion valve, and an evaporator, with the evaporator being disposed within a lower electrode. There is no need to provide such components as a refrigerating tank for storing a refrigerant, a pump for delivering a refrigerant to the processing **device**, a heater for temperature adjustment of the refrigerant, and a heat exchanger for heat exchange between the primary and secondary refrigerants. For this reason, it is possible to attain cost reduction, reduction of installation **space** due to size reduction of the apparatus, and energy saving. Further, using CO2 as refrigerant ensures that the **global warming** potential is about 1/8000 - 1/7000 of that for Freon.

ST processing app plasma etching semiconductor glass substrate; maintenance method processing app plasma etching semiconductor glass substrate

IT Valves
(expansion; processing apparatus for plasma etching of semiconductor or glass substrate and maintenance method of same)

IT Evaporators
(in lower electrode; processing apparatus for plasma etching of semiconductor or glass substrate and maintenance method of same)

IT Etching
(plasma; processing apparatus for plasma etching of semiconductor or glass substrate and maintenance method of same)

IT Compressors

Condensers
Electrodes
Energy conservation
Glass substrates
Heat transfer
Refrigerants
Refrigeration
(processing apparatus for plasma etching of semiconductor or glass substrate and maintenance method of same)
IT Semiconductor materials
(substrate; processing apparatus for plasma etching of semiconductor or glass substrate and maintenance method of same)
IT 124-38-9, **Carbon** dioxide, uses
RL: TEM (Technical or engineered material use); USES (Uses)
(refrigerant; processing apparatus for plasma etching of semiconductor or glass substrate and maintenance method of same)
RE.CNT 4 THERE ARE 4 CITED REFERENCES AVAILABLE FOR THIS RECORD
RE
(1) Denso Corp; JP 09-113152 A 1997
(2) Hitachi Ltd; JP 05-164437 A 1993
(3) Hitachi Ltd; JP 07-335630 A 1995 CAPLUS
(4) Zexel Corp; JP 11-63686 A 1999

L65 ANSWER 2 OF 63 WPIX COPYRIGHT 2004 THOMSON DERWENT on STN
AN 2004-123043 [12] WPIX
CR 1998-610173 [51]; 1998-610453 [51]; 1998-610660 [51]; 1998-610670 [51]; 1998-610687 [51]
DNN N2004-098368 DNC C2004-049661
TI **Radiating thermal energy** from terrestrial position into **deep space** comprises arranging **thermal energy transmitting** material over terrestrial object and positioning **transmitting** material so that **transmitting surface** faces **deep space**
.
DC L03 Q74 U12 X15
IN PARISE, R J
PA (PARI-I) PARISE R J
CYC 96
PI WO 2004008042 A2 20040122 (200412)* EN 71 F24J000-00
RW: AT BE CH CY DE DK EA ES FI FR GB GH GM GR IE IT KE LS LU MC MW MZ NL OA PT SD SE SL SZ TR TZ UG ZM ZW
W: AE AG AL AM AT AU AZ BA BB BG BR BY BZ CA CH CN CO CR CU CZ DE DK DM DZ EE ES FI GB GD GE GH GM HR HU ID IL IN IS JP KE KG KP KR KZ LC LK LR LS LT LU LV MA MD MG MK MN MW MX MZ NO NZ PL PT RO RU SD SE SG SI SK SL TJ TM TR TT TZ UA UG US UZ VN YU ZA ZW
ADT WO 2004008042 A2 WO 2001-US45616 20011210
PRAI US 2000-735260 20001211
IC ICM F24J000-00
AB WO2004008042 A UPAB: 20040218
NOVELTY - **Radiating thermal energy** from a terrestrial position into **deep space** comprises:
(a) arranging a **thermal energy**

transmitting material over a terrestrial object; and
(b) positioning the **thermal energy transmitting** material so that a **transmitting surface** (102) faces **deep space.**

The material has spectral **surface** properties of high emissivity in a spectral band transparent to the atmosphere of the earth.

DETAILED DESCRIPTION - INDEPENDENT CLAIMS are also included for:

(a) a **device** for **transmitting thermal energy** from a terrestrial object into **deep space** comprising a **thermal energy transmitting** material designed to cover a terrestrial object and positioned with a **transmitting surface** facing **deep space** ; and

(b) an electricity generating **device** for use in an environment having an ambient pressure, using an electricity generating cell comprising a first junction **surface** disposed in contact with a first semiconductor material; a second junction **surface** disposed in contact with a second semiconductor material; and a third junction **surface** disposed in contact with the first semiconductor material and the second semiconductor material, where first and second junction **surfaces** at a temperature different from the third **surface** junction producing a thermoelectric potential between the first and second junction **surfaces.**

USE - **Radiating thermal energy** from a terrestrial position into **deep space** (claimed).

ADVANTAGE - The concept of the night time solar cell thermally radiating from the **surface** of the **earth** into **deep space** can be utilized as a means to reduce **global warming** while producing electrical power. This cooling effect at the **surface** of the **earth** (or where the **device** is located in a terrestrial setting) can still be achieved without the added benefit of electricity production. That is, the nighttime solar cell can be reduced to a single component, the cold junction plate (100), to be used to **radiate thermal energy** from the **surface** of the **earth** into a **deep space** in a more economical, convenient, accessible way to more people so the only portion of the nighttime solar cell needed to cool the **surface** of the **earth** is the cold junction plate radiating to **deep space.** The cold junction plate, called the Earth Cooler, remains into the ambient absorbing **energy** from the surrounding air and **radiates** this **energy** away from the earth.

DESCRIPTION OF DRAWING(S) - The figure shows a section of fencing.

Junction plate 100
Transmitting surface 102
Fence post 126
Dwg.32/34

FS CPI EPI GMPI
FA AB; GI
MC CPI: L03-E05B
EPI: U12-A02A9; X15-X

L65 ANSWER 3 OF 63 WPIX COPYRIGHT 2004 THOMSON DERWENT on STN
AN 2004-099454 [10] WPIX
DNC C2004-041158
TI Molten steel production plant has at least three pairs of furnaces defining iron making loop and primary and secondary steel refining loops, molten metal **transferring device**, heat controlling **device**, removable lid, and lifting arrangement.
DC M24
IN WARNER, N A
PA (WARN-I) WARNER N A
CYC 105
PI WO 2004007778 A1 20040122 (200410)* EN 20 C21C005-56
RW: AT BE BG CH CY CZ DE DK EA EE ES FI FR GB GH GM GR HU IE IT KE LS LU MC MW MZ NL OA PT RO SD SE SI SK SL SZ TR TZ UG ZM ZW
W: AE AG AL AM AT AU AZ BA BB BG BR BY BZ CA CH CN CO CR CU CZ DE DK DM DZ EC EE ES FI GB GD GE GH GM HR HU ID IL IN IS JP KE KG KP KR KZ LC LK LR LS LT LU LV MA MD MG MK MN MW MX MZ NI NO NZ OM PG PH PL PT RO RU SC SD SE SG SK SL SY TJ TM TN TR TT TZ UA UG US UZ VC VN YU ZA ZM ZW
ADT WO 2004007778 A1 WO 2003-GB3069 20030715
PRAI GB 2002-16544 20020717
IC ICM C21C005-56
ICS C21C005-52
AB WO2004007778 A UPAB: 20040210
NOVELTY - Molten steel production plant comprises: at least 3 pairs of furnaces (1-6) defining an iron making loop and primary and secondary steel refining loops, respectively; **device** for **transferring** molten metal from one loop to another; **device** for controllably supplying heat to, and removing heat from metal in the furnaces; removable lid for each furnace; and lifting arrangement for controllably raising out of and lowering into the melt any plant items.

DETAILED DESCRIPTION - Process plant for the production of molten steel from primary and/or secondary ferrous materials in which no free oxygen is permitted to contact directly **carbon**-containing iron melts, comprises:

(a) at least three pairs of furnaces, each pair having a hearth base and being interconnected so as to form a continuous flow path loop for molten metal, with the first pair defining an iron making loop and the second and third pair defining primary and secondary steel refining loops respectively;

(b) **device** for **transferring** molten metal from the iron making loop to the first refining loop and from the first refining loop to the second refining loop;

(c) **device** for controllably supplying heat to, and removing heat from metal in the furnaces, where, in use a central region of metal in the furnace becomes or is maintained in its molten state and a peripheral region of the metal is maintained in a solid state such that the molten metal is contained within a stable solid shell of metal, with the solid metal shell defining the walls of the furnace;

(d) removable lid for each furnace, with an enclosed **space** being defined between the hearth, the lid and the solid metal shell; and

(e) lifting arrangement for controllably raising out of and lowering

into the melt any plant items, so that upon shut down, the items can be removed prior to solidification of the molten metal.

USE - The invention is used for producing molten steel from primary and/or secondary ferrous materials.

ADVANTAGE - The invention establishes, maintaining in stable operation, taking-off line for maintenance or planned shut-downs, and re-starts a process employing a number of melt circulation loops arranged in series to effect integrated iron making and steel making on a continuous basis. No free oxygen is permitted to contact directly **carbon**-containing iron melts.

DESCRIPTION OF DRAWING(S) - The figure is a schematic sectional plan view of a coal-based continuous steel making plant.

Furnaces 1-6

Dwg.1/3

FS CPI

FA AB; GI

MC CPI: M24-A05; M24-A05C; M24-B02C; M24-E

L65 ANSWER 4 OF 63 CAPLUS COPYRIGHT 2004 ACS on STN

AN 2004:410533 CAPLUS

ED Entered STN: 21 May 2004

TI Solar energy in progress and future research trends

AU Sen, Zekai

CS Faculty of Aeronautics and Astronautics, Department of Meteorology, Istanbul Technical University, Maslak, Istanbul, 34469, Turk.

SO Progress in Energy and Combustion Science (2004), 30(4), 367-416
CODEN: PECSDO; ISSN: 0360-1285

PB Elsevier Science Ltd.

DT Journal

LA English

CC 52 (Electrochemical, Radiational, and Thermal Energy Technology)

AB Extensive fossil fuel consumption in almost all human activities led to some undesirable phenomena such as atmospheric and environmental pollutions, which have not been experienced before in known human history. Consequently, **global warming**, **greenhouse** affect, climate change, ozone layer depletion and acid rain terminologies started to appear in the literature frequently. Since 1970, it has been understood scientifically by expts. and researches that these phenomena are closely related to fossil fuel uses because they emit **greenhouse** gases such as **carbon** dioxide (CO2) and methane (CH4) which hinder the long wave terrestrial radiation to escape into **space**, and consequently, the **earth** troposphere becomes **warmer.** In order to avoid further impacts of these phenomena, the two concentrative alternatives are either to improve the fossil fuel quality with redns. in their harmful emissions into the atmospheric or more significantly to replace fossil fuel usage as much as possible with environmentally friendly, clean and renewable energy sources. Among these sources, solar energy comes at the top of the list due to its abundance, and more evenly distribution in nature than any other renewable energy types such as wind, geothermal, hydro, wave and tidal energies. It must be the main and common purpose of humanity to sustain environment for the betterment of future generations with sustainable energy developments.

On the other hand, the known limits of fossil fuels compel the societies of the world in the long run to work jointly for their gradual replacement by renewable energy alternatives rather than the quality improvement of fossil sources. Solar radiation is an integral part of different renewable energy resources. It is the main and continuous input variable from practically inexhaustible sun. Solar energy is expected to play a very significant role in the future especially in developing countries, but it has also potential prospects for developed countries. The material presented in this paper is chosen to provide a comprehensive account of solar energy sources and conversion methods. For this purpose, explanatory background material has been introduced with the intention that engineers and scientists can have introductory preliminaries on the subject both from application and research points of view. Applications of solar energy in terms of low and high temperature collectors are given with future research directions. Furthermore, photovoltaic **devices** are discussed for future elec. energy generations based on solar power site-exploitation and transmission by different means over long distances such as fiber-optic cables. Another future perspective use of solar energy is its combination with water and as a consequent electrolysis anal. generation of hydrogen gas, which is expected to be another form of clean energy sources. Combination of solar energy and water for hydrogen gas production is called solar-hydrogen energy. Necessary research potentials and application possibilities are presented with sufficient background. Possible future new methodologies are mentioned and finally recommendations and suggestions for future research and application directions are presented with relevant literature review.

L65 ANSWER 5 OF 63 WPIX COPYRIGHT 2004 THOMSON DERWENT on STN
AN 2003-757262 [71] WPIX
DNN N2003-606821 DNC C2003-207902
TI Cooling optical fiber used to **transmit** information comprises contacting **heated** optical glass fiber with gaseous coolant free of helium, and subsequently contacting heated optical glass fiber with gaseous coolant containing helium.
DC L01 S03 V07
IN GHANI, M U; MARIN, O; QUEILLE, P
PA (GHAN-I) GHANI M U; (MARI-I) MARIN O; (QUEI-I) QUEILLE P; (AIRL) AIR LIQUIDE SA
CYC 102
PI WO 2003080523 A2 20031002 (200371)* EN 24 C03B037-023
RW: AT BE BG CH CY CZ DE DK EA EE ES FI FR GB GH GM GR HU IE IT KE LS LU MC MW MZ NL OA PT SD SE SI SK SL SZ TR TZ UG ZM ZW
W: AE AG AL AM AT AU AZ BA BB BG BR BY BZ CA CH CN CO CR CU CZ DE DK DM DZ EC EE ES FI GB GD GE GH GM HR HU ID IL IN IS JP KE KG KP KR KZ LC LK LR LS LT LU LV MA MD MG MK MN MW MX MZ NO NZ OM PH PL PT RO RU SC SD SE SG SK SL TJ TM TN TR TT TZ UA UG UZ VC VN YU ZA ZM ZW
US 2003205066 A1 20031106 (200374) C03B037-10
AU 2003209525 A1 20031008 (200432) C03B037-023
ADT WO 2003080523 A2 WO 2003-IB705 20030225; US 2003205066 A1 Provisional US 2002-367255P 20020325, US 2003-352105 20030128; AU 2003209525 A1 AU 2003-209525 20030225

FDT AU 2003209525 A1 Based on WO 2003080523
PRAI US 2003-352105 20030128; US 2002-367255P 20020325
IC ICM C03B037-023; C03B037-10
AB WO2003080523 A UPAB: 20031105
NOVELTY - An optical fiber drawn from a molten glass preform is cooled by contacting a heated optical glass fiber with gaseous coolant free of helium, and subsequently contacting the heated optical glass fiber with gaseous coolant containing helium.

DETAILED DESCRIPTION - An INDEPENDENT CLAIM is also included for an apparatus for cooling an optical fiber comprising a tubular **device** defining a cooling area through which the fiber to be cooled is passed; wall(s) extending transverse to longitudinal axis of cooling **device** dividing the **space** between the inlet and outlet into two cooling compartments, and having aperture(s) to allow for passage of the fiber; mechanism for passing gaseous coolant into the compartments; jacket surround the compartment(s) defining a **space** to circulate a cooling fluid; and porous **device** for minimizing flow-induced vibration of the fiber.

USE - Used for cooling an optical fiber used to **transmit** information.

ADVANTAGE - The process can efficiently and economically cool drawn optical fibers before applying resin coatings. It reduces the amount of helium used while still attaining high draw speeds.

DESCRIPTION OF DRAWING(S) - The figure is a diagrammatic view of a cooling **device.**

Dwg.3/11
FS CPI EPI
FA AB; GI
MC CPI: L01-F03K
EPI: S03-A04; V07-F01A3A; V07-F01A3C

L65 ANSWER 6 OF 63 WPIX COPYRIGHT 2004 THOMSON DERWENT on STN
AN 2004-178492 [17] WPIX
DNN N2004-141860 DNC C2004-070596
TI Fixing **device** for image forming **device**, includes temperature sensor for detecting fixing unit temperature based on infrared radiation emitted from radiation layer.
DC A89 G08 P84 Q62 S03 S06
IN SUZUKI, M; YOKOI, K
PA (BRER) BROTHER KOGYO KK
CYC 2
PI US 2003202826 A1 20031030 (200417)* 16 G03G015-20
JP 2003323072 A 20031114 (200417) 12 G03G015-20
ADT US 2003202826 A1 US 2003-424064 20030428; JP 2003323072 A JP 2002-128570 20020430
PRAI JP 2002-128570 20020430
IC ICM G03G015-20
ICS F16C013-00; G01J005-12
AB US2003202826 A UPAB: 20040310
NOVELTY - A fixing **device** includes a temperature sensor unit for detecting temperature of a fixing unit based on an infrared radiation. The sensor is positioned spaced away from the fixing unit while enabling

reception of the infrared radiation emitted from a radiation layer of a lamination structure component.

DETAILED DESCRIPTION - A fixing **device** comprises fixing unit for heating and pressing a fixable medium onto a receiving medium. The fixing unit emits infrared **radiation** obtained from **heating.** It has lamination structure component with base layer(s) (40c) and a radiation layer (40d) having an infrared emissivity higher than that of a base layer surface. A temperature sensor unit detects a temperature of the fixing unit based on the infrared radiation. It is positioned spaced away from the fixing unit while enabling reception of the infrared radiation emitted from the radiation layer.

USE - For use in image forming **device** to fix a medium, e.g. toner image on a receiving medium, e.g. printing paper.

ADVANTAGE - The invention is capable of accurately detecting the temperature of a fixing component using a non-contact type temperature detector. The image forming **device** equipped with the fixing **device** provides improved image quality without offset and defective fixing.

DESCRIPTION OF DRAWING(S) - The figure is a vertical cross-sectional view showing a heat roller and a pressure roller.

Roller section 40a
Base layer 40c
Radiation layer 40d
Pressure roller 41
Elastic layer 41b
Dwg.4/10

FS CPI EPI GMPI
FA AB; GI
MC CPI: A12-L05C1; G06-G08C
EPI: S03-A03; S06-A06; S06-A14B

L65 ANSWER 7 OF 63 WPIX COPYRIGHT 2004 THOMSON DERWENT on STN
AN 2003-844024 [78] WPIX
DNC C2003-237207
TI Utilization of aerodynamic interlacing process to produce chemical filter media involves forming filter media with laminated structure, bringing pre-formed media to heat treatment area, and bringing heat-treated media to cooling area.
DC J01 P42
IN CHUANG, C; FU, S H
PA (CHUA-I) CHUANG C; (FUSH-I) FU S H
CYC 2

PI	US 2003183083	A1	20031002	(200378)*	12	B01D053-02
	DE 10215555	A1	20031030	(200379)#		B01D039-14
	US 6703072	B2	20040309	(200418)		B05D001-36
	DE 10215555	B4	20040408	(200425)#		B01D039-14

ADT US 2003183083 A1 US 2002-106500 20020327; DE 10215555 A1 DE 2002-10215555 20020409; US 6703072 B2 US 2002-106500 20020327; DE 10215555 B4 DE 2002-10215555 20020409
PRAI US 2002-106500 20020327; DE 2002-10215555 20020409
IC ICM B01D039-14; B01D053-02; B05D001-36
ICS B01D039-16; B05D005-00

AB US2003183083 A UPAB: 20040316
NOVELTY - An aerodynamic interlacing process to produce chemical filter media is used by utilizing airflow to bring short-cut fibers and functional particulates to a composite air blower; utilizing an air suction **device** under a multi-layer interlacing forming area, thus forming the filter media with a laminated structure; bringing the pre-formed filter media to heat treatment area; and bringing the heat-treated filter media to a cooling area.

DETAILED DESCRIPTION - The utilization of an aerodynamic interlacing process to produce a chemical filter media includes utilizing airflow to bring short-cut fibers and functional particulates to a composite air blower while the blowing airflow of the functional particulates enters into the composite air blower from the center; utilizing an air suction **device** under a multi-layer interlacing forming area to adsorb the short-cut fibers and the functional particulates for sequentially piling up on a moving forming matrix while the suction air volume of the air suction **device** can be adjusted as desired to create a balance between the suction air and the mixed blowing air so that the filter media is formed with a laminated structure having three layers of from sparse to dense; bringing the pre-formed filter media to a heat treatment area over which a heat source is provided for heating the filter media while the heating temperature is controlled at 120-180 deg. C; and bringing the heat-treated filter media to a cooling area, where a further air suction **device** under the filter media continues to operate. The composite air blower is constructed as a conventional blowing apparatus. It is not restricted to the round figure, but preferably rectangular to form a narrow and slim blowing mouth, thus enabling the blowing air of the short-cut fibers and the functional particulates to enter into a diffusing mixing conveying area at the same time so that the mixed airflow diffuses the short-cut fibers and the functional particulates from the top to the bottom which flow afterwards through an air guide **device** so that the airflow is able to smoothly bring them to the multi-layer interlacing forming area beneath.

An INDEPENDENT CLAIM is also included for a structure of utilizing an aerodynamic interlacing process to produce chemical filter media, and more particularly to filter media with controllable microstructure by interlacing short-cut fibers and functional particulate matter with each other, comprising a protection layer (81) situated at the bottom of the pre-formed filter media and mainly comprising the short-cut fibers (1), showing a dense fiber accumulation state; an adsorptive layer (82) situated at the top of the protection layer and mainly comprising the functional particulates (2) that are evenly interlaced with the short-cut fibers to create a three-dimensional structure; and a flow equalizing layer (83) situated at the top of the adsorptive layer and mainly comprising the short-cut fibers, showing a sparser piled state. The density of the functional particulates is lower, while the density of a **space** between the heat-treated short-cut fiber aggregates is greater, thus creating tortuous flow paths between the short-cut fibers and the functional particulates.

USE - For utilizing an aerodynamic interlacing process to produce chemical filter media.

ADVANTAGE - The process can achieve an even and stable structure of

the adsorptive filter media. The filter media is controlled by the heat treatment procedure to create the significant structural features for enhancing the adsorptive efficiency. Additionally, the composite and flexible features of the invention is much superior to other adsorptive filter media. The filter media produced using the inventive method results in significantly longer service life than those of equivalent density but produced using a different process.

DESCRIPTION OF DRAWING(S) - The figure is a schematic drawing of a sorbent of filter media after the heat treatment.

Short-cut fibers 1
Functional particulates 2
Protection layer 81
Adsorptive layer 82
Flow equalizing layer 83

Dwg.5/7

FS CPI GMPI
FA AB; GI
MC CPI: J01-H

L65 ANSWER 8 OF 63 WPIX COPYRIGHT 2004 THOMSON DERWENT on STN
AN 2004-036327 [04] WPIX
DNN N2004-029601 DNC C2004-014614
TI Hard boron-containing material useful in manufacture of e.g. composites, grinding wheels, superconductors, thermoelectrics or radiation absorbers has a defined crystal structure.
DC E37 G04 K05 L02 L03 U14 X12 X14 X15
IN ADASCH, V; HESS, K; HILLEBRECHT, H
PA (DRON-N) DRONCO AG
CYC 1
PI DE 10219706 A1 20031120 (200404)* 14 C01B035-00
ADT DE 10219706 A1 DE 2002-10219706 20020502
PRAI DE 2002-10219706 20020502
IC ICM C01B035-00
ICS C01B031-36
AB DE 10219706 A UPAB: 20040115

NOVELTY - A material containing boron together with **carbon**, nitrogen, boron, oxygen, silicon and/or phosphorus has a defined crystal structure.

DETAILED DESCRIPTION - A material has the crystal structure with the following characteristics :

(1) a structural unit (1) is formed of 12 to an icosahedron of atoms or atom groups;

(2) structure (1) is in the form of a strained or deformed cubic, densest packing;

(3) the octahedral **spaces** created by structure (1) in the packing are predominantly occupied by second structures (2) of at least one atom;

(4) the tetrahedral **spaces** created by structure (1) in the packing are predominantly occupied by third structures of at least one atom;

(5) the third structures are bonded (especially covalently) with each of the four first structures (1) of the corresponding tetrahedron;

(6) at least some of the atoms in structure (1) are of boron; and
(7) at least some of the atoms of the third structure are of **carbon**, nitrogen, boron, oxygen, silicon and/or phosphorus.

USE - Composites especially of the ceramic-metal type containing the material are used as abrasives (especially as abrasive tools in e.g. separation grinding wheels or disks) while the materials themselves or their composites are used as superconductors, thermoelectrics (especially in temperature measuring **devices** or thermoelectrical current generators) or as radiation or particle absorbers (especially as neutron absorbers in nuclear reactors) (all claimed).

ADVANTAGE - The material (e.g. of composition B12MgC2) has a very high hardness, making it suitable for use in grinding.

DESCRIPTION OF DRAWING(S) - The drawing shows a crystal lattice with only an icosahedral structure (1).

First structure units 1A, 1B, 1C
Bonds 4
Basis vectors a, b, c
Dwg.1/4

FS CPI EPI
FA AB; GI; DCN
MC CPI: E31-K; E31-P; E31-P06A; E31-Q; G04-B04; K05-B05; L02-F01; L03-A01C2; L03-H01
EPI: U14-E05A1; U14-E05A3; U14-E05B; U14-F01B; X12-D06B2; X14-C01; X15-D

L65 ANSWER 9 OF 63 CAPLUS COPYRIGHT 2004 ACS on STN
AN 2004:91671 CAPLUS
DN 140:348167
ED Entered STN: 05 Feb 2004
TI Free-**space**-wiring fabrication in nano-**space** by focused-ion-beam chemical vapor deposition
AU Morita, Takahiko; Kometani, Reo; Watanabe, Keiichiro; Kanda, Kazuhiro; Haruyama, Yuichi; Hoshino, Takayuki; Kondo, Kazushige; Kaito, Takashi; Ichihashi, Toshinari; Fujita, Jun-ichi; Ishida, Masahiko; Ochiai, Yukinori; Tajima, Tsutomu; Matsui, Shinji
CS Himeji Institute of Technology, Graduate School of Science, LASTI, Ako, Hyogo, 678-1205, Japan
SO Journal of Vacuum Science & Technology, B: Microelectronics and Nanometer Structures--Processing, Measurement, and Phenomena (2003), 21(6), 2737-2741
CODEN: JVSTBM; ISSN: 1071-1023
PB American Institute of Physics
DT Journal
LA English
CC 76-2 (Electric Phenomena)
AB Focused-ion-beam chemical vapor deposition (FIB-CVD) is an excellent technol. for forming three-dimensional nanostructures. Various diamond-like-carbon (DLC) free-**space**-wirings were demonstrated by FIB-CVD using a computer-controlled pattern generator, which is a com. available pattern generator for electron-beam (EB) lithog. The material composition and crystal structure of DLC free-**space**-wiring were studied by **transmission**-electron microscopy and **energy**-dispersive x-ray spectroscopy. As a result, it became clear that DLC free-

space-wiring is amorphous carbon containing a Ga core in the wire. Furthermore, the elec. resistivity measurement of DLC free-**space**-wiring was carried out by two terminal electrodes. Au electrodes were fabricated by EB lithog. and a lift-off process. The elec. resistivity was .apprx.100 Ω cm at room temperature

ST wiring nano focused ion beam chem vapor deposition resistivity

IT Vapor deposition process
(chemical; free-**space**-wiring fabrication in nano-**space** by focused-ion-beam chemical vapor deposition consisting of amorphous C containing Ga core)

IT Crystal structure
Electric resistance
Electron beam lithography
Interconnections, electric
Nanostructures
(free-**space**-wiring fabrication in nano-**space** by focused-ion-beam chemical vapor deposition consisting of amorphous C containing Ga core)

IT Electrodes
(terminal; free-**space**-wiring fabrication in nano-**space** by focused-ion-beam chemical vapor deposition consisting of amorphous C containing Ga core)

IT 7782-40-3, Diamond, uses
RL: **DEV (Device component use)**; TEM (Technical or engineered material use); USES (Uses)
(coating materials; free-**space**-wiring fabrication in nano-**space** by focused-ion-beam chemical vapor deposition consisting of amorphous C containing Ga core)

IT 7440-55-3, Gallium, uses
RL: **DEV (Device component use)**; TEM (Technical or engineered material use); USES (Uses)
(core in wire; free-**space**-wiring fabrication in nano-**space** by focused-ion-beam chemical vapor deposition consisting of amorphous C containing Ga core)

IT **7440-44-0**, Diamond-like-carbon, processes
RL: PEP (Physical, engineering or chemical process); PYP (Physical process); TEM (Technical or engineered material use); PROC (Process); USES (Uses)
(diamond-like; free-**space**-wiring fabrication in nano-**space** by focused-ion-beam chemical vapor deposition consisting of amorphous C containing Ga core)

IT 7440-57-5, Gold, properties
RL: **DEV (Device component use)**; PRP (Properties); TEM (Technical or engineered material use); USES (Uses)
(free-**space**-wiring fabrication in nano-**space** by focused-ion-beam chemical vapor deposition consisting of amorphous C containing Ga core)

RE.CNT 6 THERE ARE 6 CITED REFERENCES AVAILABLE FOR THIS RECORD

RE

(1) DeMarco, A; J Vac Sci Technol B 1999, V17, P3154 CAPLUS
(2) Fujita, J; J Vac Sci Technol B 2001, V19, P2834 CAPLUS
(3) Fujita, J; J Vac Sci Technol B 2002, V20, P2686 CAPLUS

(4) Kometani, R; Jpn J Appl Phys, Part 1 2003, V42, P4107 CAPLUS
(5) Matsui, S; J Vac Sci Technol B 2000, V18, P3181 CAPLUS
(6) Morita, T; Jpn J Appl Phys, Part 1 2003, V42, P3874 CAPLUS

L65 ANSWER 10 OF 63 CAPLUS
AN 2003:337012 CAPLUS
DN 139:59304
ED Entered STN: 05 May 2003
TI Ablation radiation shields for nuclear fusion rockets
AU Coreano, Luis; Cassenti, Brice N.
CS Rensselaer at Hartford and Pratt + Whitney, East Hartford, CT, 06108, USA
SO AIP Conference Proceedings (2003), 654(Space Technology and Applications International Forum--STAIF 2003), 502-509
CODEN: APCPCS; ISSN: 0094-243X
PB American Institute of Physics
DT Journal
LA English
CC 71-2 (Nuclear Technology)
AB Pulse nuclear propulsion was the subject of extensive studies since the 1960's. Early concepts examined external pulse propulsion where small critical mass nuclear **devices** are ejected from the rear of the rocket. A pusher plate absorbs some of the energy form the detonation, which ablates the plate and provides thrust for the rocket. It is also possible to have the **device** detonate in an enclosed chamber (i.e., internal pulse propulsion). Again, in this case, ablation is the primary method for applying the thrust. Ablation can not only provide thrust but it can also aid in the dissipation of the **heat** in a n **radiation** shield. Since high-energy neutrons will be abundant in D-T fusion reactions, fusion rockets that use this reaction usually are designed with a **radiator** to dissipate the **heat** from the shield. These radiators usually require a considerable mass. C and W ablative shields may be considerably more effective. Ablation and radiation are compared as mechanisms to dissipate the heat. Although ablation provides a considerable mass saving heat loses at the surfaces will create thermal gradients that will adversely effect the ablation rate, and may significantly increase the mass loss.
ST ablation radiation nuclear fusion thrust rocket
IT Ablation
Nuclear fusion
(ablation radiation shields for nuclear fusion rockets)
IT Detonation
(in relation to ablation radiation shields for nuclear fusion rockets)
IT **Radiative heat** transfer
(in shields for nuclear fusion rockets)
IT Propulsion
(nuclear; ablation radiation shields for nuclear fusion rockets)
IT **Space** vehicles
(thrusters; ablation radiation shields for)
IT 7440-33-7, Tungsten, properties **7440-44-0**, Carbon, properties
7440-61-1, Uranium, properties 12070-12-1, Tungsten carbide (WC)
RL: PRP (Properties)
(in ablation radiation shields for nuclear fusion rockets)

RE.CNT 21 THERE ARE 21 CITED REFERENCES AVAILABLE FOR THIS RECORD
RE

(1) Bond, A; Project Daedalus: The Mission Profile 1978, Supplement, PS37
(2) Bussard, R; private communication 2001
(3) Cassenti, B; AIAA Journal of Propulsion and Power 1997, V13, P428 CAPLUS
(4) Cassenti, B; AIAA/ASME/SAE/ASEE 38th Joint Propulsion Conference 2001, Paper AIAA 2001-3930
(5) Cassenti, B; Paper AIAA-95-2898 presented at the 31st Joint Propulsion Conference and Exhibit 1995
(6) Cassenti, B; presented at the 34rd AIAA/ASME/SAE/ASEE Joint Propulsion Conference 1998, Paper AIAA 98-3590
(7) Cassenti, B; presented at the 35th AIAA/ASME/ASEE Joint Propulsion Conference and Exhibit 1999, Paper AIAA-99-2699
(8) Cassenti, B; presented at the Space Technology & International Forum (STAIF-2002) 2002
(9) Gaidos, G; AIAA/ASME/SAE/ASEE 34th Joint Propulsion Conference 1998, Paper AIAA 98-3404
(10) Kammash, T; Fusion Technology 1987, V12, P11 CAPLUS
(11) Kammash, T; Journal of Propulsion and Power 1992, V8(3), P644
(12) Kammash, T; Journal of Propulsion and Power 1992, V8, P644
(13) Kammash, T; Nuclear Fusion 1989, V29, P1079 CAPLUS
(14) Lewis, R; AIAA/SAE/ASME 32nd Joint Propulsion lake Buena Vista 1996, Paper AIAA 96-3069
(15) Lewis, R; AIAA/SAE/ASME/ASEE 26th Joint Propulsion Conference 1990
(16) Martin, A; Journal of the British Interplanetary Society 1979, V32, P283
(17) McPhee, J; The Curve of Binding Energy 1974
(18) Nance, J; IEEE Transactions on Nuclear Science 1965, VNS-12, P177
(19) Solem, J; Journal of the British Interplanetary Society 1993, V46, P21
(20) Solem, J; Journal of the British Interplanetary Society 1994, V47, P229
(21) Williams, C; AIAA/ASME/SAE/ASEE 33rd Joint 1997

L65 ANSWER 11 OF 63 CAPLUS
AN 2002:340267 CAPLUS
DN 137:39065
ED Entered STN: 08 May 2002
TI Energy relaxation of quantum-well excitons during transport
AU Zhao, Hui; Moehl, Sebastian; Kalt, Heinz
CS Institut fuer Angewandte Physik, Universitat Karlsruhe, Karlsruhe, D-76128, Germany
SO Los Alamos National Laboratory, Preprint Archive, Condensed Matter (2002) 1-4, 3 May 2002
CODEN: LNCMFR
PB Los Alamos National Laboratory
DT Preprint
LA English
CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)
AB The authors study the energy relaxation of excitons during the real-**space** transport in a ZnSe quantum well by using microphotoluminescence with spatial resolution enhanced by a solid immersion lens. The spatial evolution of the LO-phonon sideband, originating from the LO-phonon assisted recombination of hot excitons, is measured

directly. By calculating the LO-phonon assisted recombination probability, the authors obtain the nonthermal exciton **energy** distribution and observe **directly** the **energy** relaxation of hot excitons during their transport. The authors find the excitons remain hot during their transport on a length scale of several micrometers. Thus the excitonic transport on this scale cannot be described by classical diffusion.

ST energy relaxation quantum well exciton

IT Diffusion
Electron-hole recombination
Exciton
LO phonon
Quantum well **devices**
(energy relaxation of quantum-well excitons during transport)

IT **1315-09-9**, Zinc selenide (ZnSe)
RL: **DEV (Device component use)**; USES (Uses)
(energy relaxation of quantum-well excitons during transport)

RE.CNT 18 THERE ARE 18 CITED REFERENCES AVAILABLE FOR THIS RECORD

RE
(1) Chao, L; Appl Phys Lett 1999, V74, P741 CAPLUS
(2) Hillmer, H; Appl Phys Lett 1988, V53, P1937 CAPLUS
(3) Hillmer, H; Phys Rev B 1989, V39, P10901 CAPLUS
(4) Hillmer, H; Phys Rev B 1990, V42, P3220 CAPLUS
(5) Hillmer, H; Phys Rev B 1992, V45, P1240 CAPLUS
(6) Kalt, H; J Crystal Growth 1998, V184/185, P795 CAPLUS
(7) Logue, F; J Appl Phys 1997, V81, P536 CAPLUS
(8) Mitin, V; Quantum heterostructures 1999, P18
(9) Pelekanos, N; Phys Rev B 1991, V43, P9354 CAPLUS
(10) Permogorov, S; Excitons 1982
(11) Snoeks, E; J Appl Phys 1998, V84, P3611 CAPLUS
(12) Stanley, R; Phys Rev Lett 1991, V67, P128 CAPLUS
(13) Takagahara, T; Phys Rev B 1985, V31, P6552 CAPLUS
(14) Umlauff, M; Phys Rev B 1998, V57, P1390 CAPLUS
(15) Vertikov, A; Appl Phys Lett 1999, V74, P850 CAPLUS
(16) von Freymann, G; Appl Phys Lett 2000, V76, P203 CAPLUS
(17) Wolford, D; Phys Rev B 1993, V47, P15601 CAPLUS
(18) Zhao, H; Appl Phys Lett 2002, V80, P1391 CAPLUS

L65 ANSWER 12 OF 63 CAPLUS

AN 2002:488036 CAPLUS
DN 137:53661
ED Entered STN: 28 Jun 2002
TI Method and **device** for heating gas with a thin layer of nuclear fuel, and **space** engine using such method
IN Rubbia, Carlo
PA Switz.
SO U.S. Pat. Appl. Publ., 42 pp.
CODEN: USXXCO
DT Patent
LA English
IC ICM G21D001-00
ICS G21C023-00

NCL 376318000
CC 71-13 (Nuclear Technology)
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	US 2002080907	A1	20020627	US 2001-782558	20010213
PRAI	IT 2000-RM521	A	20000928		

AB A gas, e.g. H, at relatively low pressure is **directly heated** by fission fragments (FF) emitted by a thin layer of fissile material, e.g. 242mAm, deposited on the inner wall of a chamber, which is cooled to a temperature of 1,000-1,500 K. The gas is preferably emitted as a capillary flow through the walls of porous cylindrical tubes. Its temperature progressively increases until it reaches an equilibrium value of ≈9,500 K, at which point FF **heating** and **radiative** cooling balance. With a relatively modest surface power d. at the foil of 200 W/cm2, the specific, volume-averaged power given to the H gas may be as large as 0.66 MW/g. Heating powers up to MW's for each gram of gas are therefore feasible with acceptable foil surface heating. The fissile material may be exposed to a neutron flux to induce fission. This gas heating method can be used in rocket engines for **deep space** propulsion and the design of a functional engine is presented.

ST **space** rocket propulsion hydrogen heating fission fragment americium 242

IT Flow
(capillary; method and **device** for heating gas with a thin layer of fissile material, and **space** engine using this method)

IT Cooling apparatus
Nuclear energy
Nuclear fuels
Rocket engines
Thickness
(method and **device** for heating gas with a thin layer of fissile material, and **space** engine using this method)

IT Carbides
RL: **DEV (Device component use)**; USES (Uses)
(method and **device** for heating gas with a thin layer of fissile material, and **space** engine using this method)

IT Fission products
RL: PEP (Physical, engineering or chemical process); PYP (Physical process); PROC (Process)
(method and **device** for heating gas with a thin layer of fissile material, and **space** engine using this method)

IT Heating
Propulsion
(nuclear; method and **device** for heating gas with a thin layer of fissile material, and **space** engine using this method)

IT **Space** vehicles
(thrusters; method and **device** for heating gas with a thin layer of fissile material, and **space** engine using this

method)
IT 1304-56-9, Beryllium oxide, uses 7440-41-7, Beryllium, uses
7440-44-0, Carbon, uses 12070-08-5, Titanium carbide
13982-05-3, Lithium-7, uses
RL: **DEV (Device component use)**; USES (Uses)
(method and **device** for heating gas with a thin layer of
fissile material, and **space** engine using this method)
IT 1333-74-0, Hydrogen, processes
RL: PEP (Physical, engineering or chemical process); PYP (Physical
process); PROC (Process)
(method and **device** for heating gas with a thin layer of
fissile material, and **space** engine using this method)
IT 12586-31-1, Neutron
RL: PEP (Physical, engineering or chemical process); PYP (Physical
process); RCT (Reactant); PROC (Process); RACT (Reactant or reagent)
(method and **device** for heating gas with a thin layer of
fissile material, and **space** engine using this method)
IT 13968-55-3, Uranium-233, reactions 13981-54-9, Americium-242, reactions
15117-48-3, Plutonium-239, reactions 15117-96-1, Uranium-235, reactions
RL: RCT (Reactant); RACT (Reactant or reagent)
(method and **device** for heating gas with a thin layer of
fissile material, and **space** engine using this method)

L65 ANSWER 13 OF 63 CAPLUS COPYRIGHT 2004 ACS on STN
AN 2002:784488 CAPLUS
DN 137:319214
ED Entered STN: 15 Oct 2002
TI Electric radiant **heater** with multiple plate **reflectors**
IN Suzuki, Hiroyuki
PA Matsushita Electric Industrial Co., Ltd., Japan
SO Jpn. Tokkyo Koho, 4 pp.
CODEN: JTXXFF
DT Patent
LA Japanese
IC ICM F24C007-06
ICS H05B003-10; H05B003-44
CC 76-14 (Electric Phenomena)
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 3334711	B1	20021015	JP 2001-219390	20010719
	JP 2003035423	A2	20030207		
PRAI	JP 2001-219390		20010719		

AB The invention relates to an elec. radiant heater for **space**
heating, wherein the arrangement of multiple plate **reflectors**
improves forward **heating** efficiency without raising the power
rating.
ST elec radiant **heater reflector**
IT Electric **heaters**
(elements; **reflector** arrangement of elec. radiant
heater)
IT **Heaters**

(radiant; **reflector** arrangement of elec. radiant
heater)
IT Optical reflectors
(thermal; **reflector** arrangement of elec. radiant
heater)
IT **7440-44-0**, Carbon, uses
RL: **DEV (Device component use)**; USES (Uses)
(**reflector** arrangement of elec. radiant **heater**)

L65 ANSWER 14 OF 63 WPIX COPYRIGHT 2004 THOMSON DERWENT on STN
AN 2003-148929 [14] WPIX
DNN N2003-117510 DNC C2003-038704
TI Testing of electronic component, involves exposing electronic component to inert test fluid which comprises non-flammable fluorinated ketone.
DC E15 E16 L03 S01 S02
IN GRENFELL, M W; MINDAY, R M
PA (MINN) 3M INNOVATIVE PROPERTIES CO
CYC 100
PI WO 2002103319 A1 20021227 (200314)* EN 24 G01M003-10
RW: AT BE CH CY DE DK EA ES FI FR GB GH GM GR IE IT KE LS LU MC MW MZ
NL OA PT SD SE SL SZ TR TZ UG ZM ZW
W: AE AG AL AM AT AU AZ BA BB BG BR BY BZ CA CH CN CO CR CU CZ DE DK
DM DZ EC EE ES FI GB GD GE GH GM HR HU ID IL IN IS JP KE KG KP KR
KZ LC LK LR LS LT LU LV MA MD MG MK MN MW MX MZ NO NZ OM PH PL PT
RO RU SD SE SG SI SK SL TJ TM TN TR TT TZ UA UG UZ VN YU ZA ZM ZW
US 2003007543 A1 20030109 (200314) G01N025-00
ADT WO 2002103319 A1 WO 2002-US11273 20020410; US 2003007543 A1 US 2001-881416 20010614
PRAI US 2001-881416 20010614
IC ICM G01M003-10; G01N025-00
ICS G01M003-04; G01M003-20; G01M003-22; G01M019-00; G01R031-316
AB WO2002103319 A UPAB: 20030227
NOVELTY - Providing new test fluids for environmental testing of electronic components that are non-inflammable, are low in toxicity, have no ODP, exhibit a low GWP, and importantly demonstrate the performance requirements needed for the testing of electronic equipment.

DETAILED DESCRIPTION - An electronic component is exposed to an inert test fluid. The inert test fluid comprises a fluorinated ketone which is non-flammable and has 5-18C and up to 2 hydrogen atoms.

USE - For testing electronic component.

ADVANTAGE - The test fluid for environmental testing of electronic components, is non-flammable, and has low toxicity, and is free of **global warming** potential and ozone depletion potential.
The testing fluid has low surface tension, high density, low viscosity, high thermal stability, high dielectric strength and large liquid range temperature. The fluorinated ketone exhibits high thermal and chemical stability under test conditions. The treated hermetic seal provides high reliability electronic **device.**
Dwg.0/0
FS CPI EPI
FA AB; DCN
MC CPI: E10-F02A1; E10-F02C; L03-H04E9; L03-J

EPI: S01-G01; S02-J06A; S02-J06A5; S02-J09

L65 ANSWER 15 OF 63 WPIX COPYRIGHT 2004 THOMSON DERWENT on STN
AN 2003-129275 [12] WPIX
DNC C2003-033068
TI Apparatus for generating oxygen and removing **carbon** dioxide, has photosynthesis microorganism, culture medium for microorganism, and container provided with exhaust hole for receiving microorganism and culture medium.
DC D16 E36
IN KIM, M W; LEE, J H; KIM, M; LEE, J
PA (KIMM-I) KIM M W; (LEEJ-I) LEE J H; (BIOT-N) BIO2 LAB CO LTD
CYC 100
PI WO 2002092755 A1 20021121 (200312)* EN 20 C12M001-00
RW: AT BE CH CY DE DK EA ES FI FR GB GH GM GR IE IT KE LS LU MC MW MZ NL OA PT SD SE SL SZ TR TZ UG ZM ZW
W: AE AG AL AM AT AU AZ BA BB BG BR BY BZ CA CH CN CO CR CU CZ DE DK DM DZ EC EE ES FI GB GD GE GH GM HR HU ID IL IN IS JP KE KG KP KZ LC LK LR LS LT LU LV MA MD MG MK MN MW MX MZ NO NZ OM PH PL PT RO RU SD SE SG SI SK SL TJ TM TN TR TT TZ UA UG US UZ VN YU ZA ZM ZW
KR 2002080200 A 20021023 (200317) C12M001-00
KR 2003079032 A 20031010 (200412) G01N021-25
ADT WO 2002092755 A1 WO 2002-KR663 20020411; KR 2002080200 A KR 2001-19638 20010412; KR 2003079032 A KR 2002-17782 20020401
PRAI KR 2002-17782 20020401; KR 2001-19638 20010412
IC ICM C12M001-00; G01N021-25
AB WO 200292755 A UPAB: 20030218
NOVELTY - An apparatus (I) for generating oxygen (O2) and removing **carbon** dioxide (CO2), consists of a photosynthesis microorganism (MO) and a culture medium for MO, and a container for receiving MO and the culture medium, where the container is designed to **transmit** light and is provided with an exhaust hole for exhausting O2 generated by the photosynthesis reaction or MO during which CO2 is absorbed.

DETAILED DESCRIPTION - An INDEPENDENT CLAIM is also included for an apparatus (II) for identifying O2 generation, consisting of a receiving part for receiving an indicator whose color is changed when reacting with O2, a sensing part for sensing an absorption amount of light passing through the indicator, a control part for calculating the content and amount of O2 according to the absorption amount sensed by the sensing part, and a display part electrically connected to the control part to show a variation of an input value to a user.

USE - (I) is useful for generating O2 and removing CO2. (II) is useful for identifying O2 generation (claimed).

ADVANTAGE - (I) is environment-oriented and designed to have an advantage of maintenance and operation control. (I) is a simple **device**, uses less energy and reduces costs. (I) is designed such that even a person who doesn't have chemical knowledge can identify the presence and generation of O2. (I) easily identifies the variation of the amount and contents of O2. (I) reduces CO2 in the air, and prevents **global warming** phenomenon and air pollution. (I) can be operated even at a place where light is insufficient regardless of time.

DESCRIPTION OF DRAWING(S) - The figure shows a perspective view of an

O2 generating apparatus for illustrating a display part of a unit for identifying O2 generation.
Dwg.11/11

FS CPI
FA AB; GI; DCN
MC CPI: D05-H01; D05-H02; D05-H09; E11-Q03L; E31-D01; E31-N05C

L65 ANSWER 16 OF 63 WPIX COPYRIGHT 2004 THOMSON DERWENT on STN
AN 2003-018781 [01] WPIX
DNN N2003-014496 DNC C2003-004561
TI Heat **transfer** fluid mixture for cooling items, e.g. optical fibers, consists of heavy gas consisting of nitrogen, argon, and/or **carbon** dioxide, and light gas consisting of hydrogen, and/or helium.
DC G04 L01 Q75 S03 V07
IN GIACOBBE, F W
PA (AIRL) AMERICAN AIR LIQUIDE INC; (AIRL) AIR LIQUIDE SA
CYC 26
PI WO 2002074709 A1 20020926 (200301)* EN 43 C03B037-027
RW: AT BE CH CY DE DK ES FI FR GB GR IE IT LU MC NL PT SE TR
W: AU BR CN IN JP
US 2002129622 A1 20020919 (200301) C03B037-07
US 2002134530 A1 20020926 (200301) F25B029-00
EP 1373153 A1 20040102 (200409) EN C03B037-027
R: AT BE CH CY DE DK ES FI FR GB GR IE IT LI LU MC NL PT SE TR
AU 2002308171 A1 20021003 (200432) C03B037-027
ADT WO 2002074709 A1 WO 2002-EP3030 20020314; US 2002129622 A1 Provisional US 2001-276053P 20010315, US 2001-3912 20011031; US 2002134530 A1 Provisional US 2001-278662P 20010320, US 2001-4061 20011031; EP 1373153 A1 EP 2002-753572 20020314, WO 2002-EP3030 20020314; AU 2002308171 A1 AU 2002-308171 20020314
FDT EP 1373153 A1 Based on WO 2002074709; AU 2002308171 A1 Based on WO 2002074709
PRAI US 2001-4061 20011031; US 2001-276053P 20010315;
US 2001-278662P 20010320; US 2001-3912 20011031
IC ICM C03B037-027; C03B037-07; F25B029-00
ICS C09K005-00
AB WO 200274709 A UPAB: 20030101
NOVELTY - Heat **transfer** fluid mixture consists of a heavy gas consisting of nitrogen, argon, and/or **carbon** dioxide; and a light gas consisting of hydrogen, and/or helium. The light gas has a concentration of 20-99 mole%.
DETAILED DESCRIPTION - INDEPENDENT CLAIMS are included for:
(a) A method of cooling or **heating** an item comprising **directly** and/or indirectly contacting the item with the mixture;and
(b) A method of making a heat **transfer** fluid consisting of a light gas and a heavy gas comprising providing a light gas consisting of hydrogen, and/or helium, from a light gas source; providing a heavy gas consisting of nitrogen, argon, and/or **carbon** dioxide, from a heavy gas source; ascertaining a heating or cooling demand; and combining the light gas and the heavy gas based on the demand.

USE - For cooling items, e.g. cylindrical optical fiber (claimed).
ADVANTAGE - The heat **transfer** fluid mixture can easily be changed in composition to take advantage of the heat **transfer** properties of helium and/or hydrogen, without the great expense of pure helium and expensive equipment needed to compress helium, while taking advantage of velocity effects on improvements in heat **transfer** performance. It reduces the cost of using pure helium while providing nearly the same heat **transfer** as pure helium. The heat **transfer** fluid mixtures, when flowing past a heat **transfer** surface at a very low bulk velocity or very high bulk velocity, exhibit heat **transfer** coefficients that are less but close to that of the pure light gas, e.g. helium, flowing at the same bulk velocity.
DESCRIPTION OF DRAWING(S) - The figure illustrates graphically experimental data useful for helium/argon heat **transfer** fluid mixtures.
Dwg.3/5

FS CPI EPI GMPI
FA AB; GI
MC CPI: G04-B01; L01-F03G
EPI: S03-A04; V07-F01A1

L65 ANSWER 17 OF 63 WPIX COPYRIGHT 2004 THOMSON DERWENT on STN
AN 2002-488663 [52] WPIX
CR 2003-057078 [05]
DNN N2002-386214 DNC C2002-138761
TI Heat spreader for dissipating semiconductor packages, comprises **carbon** fibers oriented with **carbon**/metal matrix materials.
DC L03 Q78 V04
IN CHRYSLER, G; HOULE, S; KONING, P; CHRYSLER, G M; HOULE, S J; KONING, P A
PA (ITLC) INTEL CORP; (CHRY-I) CHRYSLER G M; (HOUL-I) HOULE S J; (KONI-I) KONING P A
CYC 98
PI US 2002038704 A1 20020404 (200252)* 15 F28F007-00
AU 2001094836 A 20020408 (200252) B29C070-30
WO 2002026479 A2 20020404 (200252) EN B29C070-30
RW: AT BE CH CY DE DK EA ES FI FR GB GH GM GR IE IT KE LS LU MC MW MZ NL OA PT SD SE SL SZ TR TZ UG ZW
W: AE AG AL AM AT AU AZ BA BB BG BR BY BZ CA CH CN CO CR CU CZ DE DK DM DZ EC EE ES FI GB GD GE GH GM HR HU ID IL IN IS JP KE KG KP KR KZ LC LK LR LS LT LU LV MA MD MG MK MN MW MX MZ NO NZ PH PL PT RO RU SD SE SG SI SK SL TJ TM TR TT TZ UA UG US UZ VN YU ZA ZW
EP 1320455 A2 20030625 (200341) EN B29C070-30
R: AL AT BE CH CY DE DK ES FI FR GB GR IE IT LI LT LU LV MC MK NL PT RO SE SI TR
ADT US 2002038704 A1 Div ex US 2000-670923 20000929, US 2001-955889 20010918; AU 2001094836 A AU 2001-94836 20010926; WO 2002026479 A2 WO 2001-US30352 20010926; EP 1320455 A2 EP 2001-975518 20010926, WO 2001-US30352 20010926
FDT AU 2001094836 A Based on WO 2002026479; EP 1320455 A2 Based on WO 2002026479
PRAI US 2000-670923 20000929; US 2001-955889 20010918
IC ICM B29C070-30; F28F007-00

ICS B29C070-22; H01L023-373; H05K007-20
AB US2002038704 A UPAB: 20030919
NOVELTY - A heat spreader comprises a **carbon** fibers oriented with a **carbon** or metal matrix material dispersed about the fibers.

DETAILED DESCRIPTION - A heat spreader (305) comprises:

(a) a first set of fibers, oriented approximately along a horizontal axis;

(b) a second set of fibers oriented approximately along a second horizontal axis, approximately perpendicular to the first set of fibers;

(c) a third set of fibers, some or all oriented approximately in the vertical direction, approximately perpendicular to the first and second sets of fibers; and

(d) a conductive material disposed about the fibers.

INDEPENDENT CLAIMS are also included for:

(I) a method comprising (i) placing a first set of fibers into a mold, (ii) adding a second set of fibers, (iii) disposing a heat conductive material around the fibers, and (iv) curing the heat conductive material; and

(II) a semiconductor package comprising (i) a substrate (301) having a top surface, (ii) semiconductor **device**(s) (303) attached to the top surface of the substrate, (iii) a cover secured to the substrate to create a **space** to where the semiconductor **device** is placed, (iv) a first set of fibers disposed throughout the cover, and (v) a second set of fibrous structures throughout the cover.

USE - For heat dissipating semiconductor packages.

ADVANTAGE - The invention increases the rate of **heat transfer** in all three **directions**, thus allowing rapid dissipation of **heat** through the heat spreader and to the heat sink.

DESCRIPTION OF DRAWING(S) - The figure shows a cross-section of an integrated circuit package containing the heat spreader.

substrate 301

semiconductor **device** 303

heat spreader 305

heat sink 306

sealant 307

thermal interface material 308

Dwg.3/9

FS CPI EPI GMPI
FA AB; GI
MC CPI: L04-C25
EPI: V04-T03P

L65 ANSWER 18 OF 63 WPIX COPYRIGHT 2004 THOMSON DERWENT on STN
AN 2003-246883 [24] WPIX
DNN N2003-196164 DNC C2003-063445
TI Optical storage **device**, has transparent capping layer with thickness that gives large beam spot size of convergent beam to make a power density that is less than threshold power density for mass **transfer** from medium to optical head.
DC A89 L03 T03

IN HAJJAR, R A; NOVOTNY, V
PA (TERA-N) TERASTOR CORP
CYC 1
PI US 6483801 B1 20021119 (200324)* 11 G11B007-00
ADT US 6483801 B1 US 2000-575717 20000731
PRAI US 2000-575717 20000731
IC ICM G11B007-00
AB US 6483801 B UPAB: 20030410

NOVELTY - An optical storage **device** has a storage medium with a transparent capping layer having a thickness that gives a beam spot size of a convergent beam on the second surface large enough to make a power density of the convergent beam on the second surface and less than a threshold power density for mass **transfer** from the medium to the optical head.

DETAILED DESCRIPTION - An optical storage **device** comprises a storage medium (101) comprising a substrate, a data storage layer (107) formed on the substrate to interact with **radiation energy** coupled from the optical head (102), and a transparent capping layer formed over the data storage layer. The transparent capping layer has a first surface facing the data storage layer, and a second surface opposing the first to receive the **radiation energy**. It **transmits** a convergent beam of the **radiation energy** to focus on or near the data storage layer. The transparent capping layer has a thickness that allows enough spacing between the second surface and the data storage layer so that a beam spot size of the convergent beam on the second surface is large enough to make a power density of the convergent beam on the second surface less than a threshold power density for mass **transfer** from the medium to the optical head.

An INDEPENDENT CLAIM is also included for the formation of the optical storage **device**, comprising forming a storage layer over a substrate (103) to interact with an optical beam (140) focused by an optical head to record data or to modulate the optical beam to output data; forming a capping layer over the storage layer which is transparent to couple the optical beam to the storage layer; and setting a thickness of the capping layer large enough to **space** a medium surface facing the optical head from the storage layer so that a beam spot size of the optical beam on the medium surface is large enough to make a power density of the optical beam on the medium surface less than a threshold power density for mass **transfer** from the medium to the optical head.

USE - Useful in reading and writing data by coupling optical **radiation energy** to and from a storage medium.

ADVANTAGE - The optical storage **device** can achieve high areal density data storage by using a tightly-focused laser beam to write or read information to and from a storage medium, i.e. optical disk.

DESCRIPTION OF DRAWING(S) - The figures show an optical storage system having an optical head and a storage medium, and an implementation of the system where the optical head includes solid immersion lens.

Storage medium 101
Optical head 102
Substrate 103

Data storage layer 107
Optical beam 140
1A, 1B/6
FS CPI EPI
FA AB; GI
MC CPI: A12-L03C; L03-G04B
EPI: T03-B

L65 ANSWER 19 OF 63 WPIX COPYRIGHT 2004 THOMSON DERWENT on STN
AN 2002-634477 [68] WPIX
DNN N2002-501099 DNC C2002-179013
TI Thermal harness for **space** craft and computer trays, comprises tubular heat conducting element(s) containing unidirectionally oriented thermal ccnductive graphite fiber bundles, enclosed within tubular braided sleeve.
DC A88 Q67
IN BONNEVILLE, W S; STONIER, R A
PA (SPAC-N) SPACE SYSTEMS/LORAL INC
CYC 1
PI US 6367509 B1 20020409 (200268)* 8 F16L009-00
ADT US 6367509 B1 US 2001-843898 20010427
PRAI US 2001-843898 20010427
IC ICM F16L009-00
AB US 6367509 B UPAB: 20021022
NOVELTY - Thermal harness (10) comprises a flexible graphite fiber thermal heat strap consisting of tubular heat conductive element(s) (15) (TCE). TCE comprises bundle(s) of unidirectionally oriented highly thermal conductive graphite fibers (12), enclosed within a protective flexible tubular braided sleeve. TCE is bonded with end fittings (16) at the ends, using bonding material.

USE - For mass-critical applications on **space** crafts; alternate for heat spreaders, thermal planes and other mass-intensive thermal management **devices**; computer trays, thermal doublers and heat pipe assemblies.

ADVANTAGE - The thermal harness reduces the weight of electronic assemblies by replacing currently-used components required to reduce junction temperatures. The thermal harness **directly** attaches to the **heat** generating components and creates a bridge to the heat dissipating components. The thermal harness is extremely light weight since the **carbon** fiber has a density of approximately 1.7-2.3 g/cm3. The thermal harness provides efficient heat **transfer** and eliminates thermal planes in **space** structures. Because of the high thermal efficiency of both the tubular heat strap elements and the end fittings, better thermal performance can be achieved than with the conventional heat straps at a significantly reduced mass. The flexible graphite fiber thermal heat strap also provides a means for **transferring** heat without the potential corrosion problems of metallic heat straps or graphite heat straps having metallic end fittings. The length of the flexible graphite fiber thermal heat strap can be varied depending on the specific application by varying the length of the tubular heat strap elements before their installation in to the end fittings. The use of a braided tubular element eliminates contamination from the

graphite fibers because the graphite fibers are totally encased within the outer braided sleeve that is not constructed of graphite fibers. The tubular braided sleeve of the flexible graphite fiber thermal heat strap is painted with a flexible thermal control coating, hence has improved thermo optical properties and prevents graphite contamination by providing an additional seal.

DESCRIPTION OF DRAWING(S) - The figure shows the structure of thermal harness.

Thermal harness 10
Graphite fibers 12
Flexible graphite fiber thermal heat strap elements 15
End fittings 16
Dwg.2/4

FS CPI GMPI
FA AB; GI
MC CPI: A12-E10; A12-T03; A12-W11G

L65 ANSWER 20 OF 63 CAPLUS COPYRIGHT 2004 ACS on STN
AN 2002:758999 CAPLUS
DN 138:30772
ED Entered STN: 07 Oct 2002
TI Energy relaxation during hot-exciton transport in quantum wells: Direct observation by spatially resolved phonon-sideband spectroscopy
AU Zhao, Hui; Moehl, Sebastian; Kalt, Heinz
CS Institut fur Angewandte Physik, Universitat Karlsruhe, Karlsruhe, D-76128, Germany
SO Applied Physics Letters (2002), 81(15), 2794-2796
CODEN: APPLAB; ISSN: 0003-6951
PB American Institute of Physics
DT Journal
LA English
CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)
AB We investigate the energy relaxation of excitons during the real-**space** transport in ZnSe quantum wells by using microphotoluminescence with spatial resolution enhanced by a solid immersion lens. The spatial evolution of the LO-phonon sideband, originating from the LO-phonon assisted recombination of hot excitons, is measured directly. By calculating the LO-phonon assisted recombination probability, we obtain the nonthermal **energy** distribution of excitons and observe **directly** the **energy** relaxation of hot excitons during their transport. We find the excitons remain hot during their transport on a length scale of several micrometers. Thus, the excitonic transport on this scale cannot be described by classical diffusion.
ST hot exciton energy relaxation quantum well phonon sideband spectroscopy
IT Diffusion
Electron-hole recombination
Exciton
LO phonon
Quantum well **devices**
(energy relaxation of hot excitons during transport in ZnSe quantum wells observed directly by spatially resolved phonon-sideband

spectroscopy)
IT Kinetic energy
(exciton; energy relaxation of hot excitons during transport in ZnSe quantum wells observed directly by spatially resolved phonon-sideband spectroscopy)
IT **1315-09-9**, Zinc selenide (ZnSe)
RL: **DEV (Device component use)**; PRP (Properties); USES (Uses)
(energy relaxation of hot excitons during transport in ZnSe quantum wells observed directly by spatially resolved phonon-sideband spectroscopy)
RE.CNT 18 THERE ARE 18 CITED REFERENCES AVAILABLE FOR THIS RECORD
RE
(1) Chao, L; Appl Phys Lett 1999, V74, P741 CAPLUS
(2) Hillmer, H; Appl Phys Lett 1988, V53, P1937 CAPLUS
(3) Hillmer, H; Phys Rev B 1989, V39, P10901 CAPLUS
(4) Hillmer, H; Phys Rev B 1990, V42, P3220 CAPLUS
(5) Hillmer, H; Phys Rev B 1992, V45, P1240 CAPLUS
(6) Kalt, H; J Cryst Growth 1998, V184/185, P795 CAPLUS
(7) Logue, F; J Appl Phys 1997, V81, P536 CAPLUS
(8) Mitin, V; Quantum Heterostructures 1999, P18
(9) Pelekanos, N; Phys Rev B 1991, V43, P9354 CAPLUS
(10) Permogorov, S; Excitons 1982
(11) Snoeks, E; J Appl Phys 1998, V84, P3611 CAPLUS
(12) Stanley, R; Phys Rev Lett 1991, V67, P128 CAPLUS
(13) Takagahara, T; Phys Rev B 1985, V31, P6552 CAPLUS
(14) Umlauff, M; Phys Rev B 1998, V57, P1390 CAPLUS
(15) Vertikov, A; Appl Phys Lett 1999, V74, P850 CAPLUS
(16) von Freymann, G; Appl Phys Lett 2000, V76, P203 CAPLUS
(17) Wolford, D; Phys Rev B 1993, V47, P15601 CAPLUS
(18) Zhao, H; Appl Phys Lett 2002, V80, P1391 CAPLUS

L65 ANSWER 21 OF 63 CAPLUS COPYRIGHT 2004 ACS on STN
AN 2003:615573 CAPLUS
DN 139:383897
ED Entered STN: 12 Aug 2003
TI Optimization of the thermal regime of thermoelectric generators in **waste heat** recovery applications
AU Haidar, Jihad G.; Ghojel, Jamil I.
CS Department of Mechanical Engineering, Monash University, Caulfield East, Vic, 3145, Australia
SO International Conference on Thermoelectrics (2002), 21st, 427-430
CODEN: ICTNBZ; ISSN: 1094-2734
PB Institute of Electrical and Electronics Engineers
DT Journal
LA English
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 76
AB A thermoelec. generator is a **device**, which **directly** converts **heat** to electricity. These generators were receiving renewed interest in recent years in a wide range of applications such as domestic wood heating, remote area power generation, automotive applications and power supply in interplanetary **space** flights.

Applied as **waste-heat** recovery systems (WHRS), these generators can reduce fuel consumption and **greenhouse** gases such as **carbon** dioxide in stationary and mobile power plants. A pilot study of the applicability of thermoelectricity to **waste-heat** recovery from the exhaust gases of a small-scale steam boiler is presented. The steam boiler is used as the heat source for the low temperature WHRS of a single thermoelec. module (TEM). Two main types of heat sinks are used operating under various conditions, providing the necessary cold side temperature and hence the temperature gradient through the TEM. Both the energy input to the WHRS and the cooling flow rates of air and water are controlled to determine the effect on the elec. power output. The paper will exptl. study the thermal regime of assorted heat sinks functioning under various circumstances to establish the optimum operating conditions to achieve maximum power outputs from the WHRS. Cooler cold side temps., and thus higher power output was found from water cooling. Further work is planned to estimate the thermal contact resistance at various interfaces in the system with different elec. insulators.

ST optimization temp cooling thermoelec elec generator **waste heat** recovery

IT Thermoelectric **devices**
(HZ-14 modules; optimization of thermal regime of thermoelec. generators in **waste heat** recovery applications)

IT Thermal insulators
(around heat spreader; optimization of thermal regime of thermoelec. generators in **waste heat** recovery applications)

IT Heat sinks
(cold side of **device**; optimization of thermal regime of thermoelec. generators in **waste heat** recovery applications)

IT Cooling
(effect or air or water cooling on cold side temperature and power output)

IT Heat transfer
(from combustion gases through aluminum heat spreader; optimization of thermal regime of thermoelec. generators in **waste heat** recovery applications)

IT Electric energy
(optimization of thermal regime of thermoelec. generators in **waste heat** recovery applications)

IT Models (physical)
(prototypes; optimization of thermal regime of thermoelec. generators in **waste heat** recovery applications)

IT **Waste heat**
(recovery of; optimization of thermal regime of thermoelec. generators in **waste heat** recovery applications)

IT Heat
(recovery; optimization of thermal regime of thermoelec. generators in **waste heat** recovery applications)

IT Combustion gases
(**waste heat** recovery from; optimization of thermal regime of thermoelec. generators in **waste heat** recovery applications)

IT 7429-90-5, Aluminum, uses
RL: **DEV (Device component use)**; TEM (Technical or engineered material use); USES (Uses)
(heat sink; optimization of thermal regime of thermoelec. generators in **waste heat** recovery applications)
IT 12616-75-0, 6061 T-6 Aluminum
RL: **DEV (Device component use)**; TEM (Technical or engineered material use); USES (Uses)
(heat spreader; optimization of thermal regime of thermoelec. generators in **waste heat** recovery applications)
RE.CNT 7 THERE ARE 7 CITED REFERENCES AVAILABLE FOR THIS RECORD
RE

(1) Bass, J; Proceedings of the 13th International Conference on Thermoelectrics 1995
(2) Birkholz, U; Proceedings of the 7th International Conference on Thermoelectrics 1988, P124 CAPLUS
(3) Ghojel, J; Proc 6th Asia-Pacific International symposium on Combustion and Energy Utilization 2002
(4) Haidar, J; Proc 20th International Conference on Thermoelectrics 2001, P413 CAPLUS
(5) Leavitt, F; Application and Testing of HZ-14 Thermoelectric Module 1995
(6) Takanose, E; Proceedings of the 12th International Conference on Thermoelectrics 1994, P467
(7) The Energy Conservation Centre; Japan Energy Conservation Handbook 1994-1995

L65 ANSWER 22 OF 63 CAPLUS COPYRIGHT 2004 ACS on STN
AN 2003:37494 CAPLUS
DN 138:340471
ED Entered STN: 16 Jan 2003
TI Development and testing of Goodrich 244 fire suppressant
AU Olander, Donald E.
CS Goodrich Corp., Phoenix, AZ, 85027-7899, USA
SO CPIA Publication (2002), 712(38th JANNAF Combustion Subcommittee Meeting, 2002), 345-351
CODEN: CPPUDT; ISSN: 0272-5118
PB Chemical Propulsion Information Agency
DT Journal
LA English
CC 50-6 (Propellants and Explosives)
AB Goodrich has developed an active non-ozone depleting replacement for Halon. It is intended primarily for critical applications such as aircraft cargo holds, maritime engine and equipment rooms, etc., as a total flooding agent. Fire suppression tests were performed in full-scale test **devices** rather than using laboratory tests. The surprising result show that the weight of the new suppressant needed is 7% of that of Halon 1301 in the identical tests. The stored volume of the suppressant is approx. 3% of that required for Halon 1301. For fire suppression lasting longer than 30 min, 2-1/2 lb of suppressant agent for each 1000 cubic feet of enclosure is recommended. Goodrich 244 is a solid propellant using potassium bromate as the principal oxidizer. Approx. 47% of the effluent is potassium bromide, the active fire suppressant. The gaseous products are

water, **carbon** dioxide and nitrogen. The bromine atom is in a
solid ingredient both before and after use. Therefore, the ozone
depletion potential is zero. The only **global warming**
agent in the effluent is **carbon** dioxide, which constitutes 24%
of the effluent. Therefore, the **global warming**
potential is 0.2. Because the acute inhalation test ("rat test") show no
gross abnormalities after a 4 h exposure followed by 2 wk observation and
necropsy, the SNAP approval is for limited times in inhabited
spaces. The fire suppressant data were obtained by testing in a
chamber, which is a surrogate of a cargo bay in the DC-10 aircraft. It is
agreement with the design published by the FAA. Instrumentation includes
45 thermocouples, FTIR analyses, oxygen concentration meter, and aerosol
chemical
concentration equipment, visible and IR videos and two pressure transducers.
Other applications for the technol. are listed.

ST Goodrich 244 fire suppressant testing
IT Aircraft
Fire extinguishers
(development and testing of Goodrich 244 fire suppressant)
IT Propellants (fuels)
(solid; development and testing of Goodrich 244 fire suppressant)
IT 124-38-9, **Carbon** dioxide, formation (nonpreparative)
7727-37-9, Nitrogen, formation (nonpreparative)
RL: FMU (Formation, unclassified); FORM (Formation, nonpreparative)
(development and testing of Goodrich 244 fire suppressant)
IT 7758-01-2, Potassium bromate 385821-52-3, Goodrich 244
RL: TEM (Technical or engineered material use); USES (Uses)
(development and testing of Goodrich 244 fire suppressant)
RE.CNT 6 THERE ARE 6 CITED REFERENCES AVAILABLE FOR THIS RECORD
RE

(1) Anon; US 5419118
(2) Anon; US 5861106 CAPLUS
(3) Anon; US 5988438
(4) Anon; US 6019177 CAPLUS
(5) Anon; FAA Document "Minimum Performance Standards for Aircraft Cargo Compartments Built-in Fire Suppression Systems
(6) Stiebich, R; An Analysis of Halon 1301 Combustion Products Using GC-MS with a Wide-Bore, Porous Open Tubular (PLOT) Column

L65 ANSWER 23 OF 63 CAPLUS COPYRIGHT 2004 ACS on STN
AN 2002:154704 CAPLUS
DN 136:286216
ED Entered STN: 28 Feb 2002
TI Low-orbit-environment protective coating for all-solid-state
electrochromic surface **heat radiation** control
devices
AU Franke, Eva; Neumann, H.; Schubert, M.; Trimble, C. L.; Yan, Li; Woollam,
J. A.
CS Institut fur Oberflachenmodifizierung Leipzig, Leipzig, 04318, Germany
SO Surface and Coatings Technology (2002), 151-152, 285-288
CODEN: SCTEEJ; ISSN: 0257-8972
PB Elsevier Science S.A.

DT Journal
LA English
CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)
AB The authors suggest use of low-orbit **space** ambient protective surface coatings for the authors' recently reported all-solid-state electrochromic surface-heat emissivity modulation **device** to (i) to improve the IR emissivity modulation upon use of the protective layer's antireflection effect; and (ii) protect the layer stack within hazardous **space** environments. The authors study the optical properties of ZnSe as potential coating material before and after electron cyclotron resonance O plasma treatment, which is a simulation of the low earth orbital environment. The influence on the **device** performance is evaluated.
ST protective coating electrochromic material optical modulator IR luminescence
IT Coating process
Electron cyclotron resonance
IR luminescence
Optical modulators
(low-orbit-environment protective coating for all-solid-state electrochromic surface **heat radiation** control **devices**)
IT 1314-35-8, Tungsten oxide, properties 1314-61-0, Tantalum oxide **1315-09-9**, Zinc selenide (ZnSe)
RL: **DEV (Device component use)**; PRP (Properties); USES (Uses)
(low-orbit-environment protective coating for all-solid-state electrochromic surface **heat radiation** control **devices**)
RE.CNT 17 THERE ARE 17 CITED REFERENCES AVAILABLE FOR THIS RECORD
RE
(1) Cogan, S; J Appl Phys 1986, V60, P2735 CAPLUS
(2) Cogan, S; Proc SPIE 1989, V1149, P2 CAPLUS
(3) DeVries, M; J Vac Sci Technol A 1999, V17, P2906 CAPLUS
(4) Franke, E; Appl Phys Lett 2000, V77, P930 CAPLUS
(5) Franke, E; J Appl Phys 2000, V88, P5166 CAPLUS
(6) Franke, E; J Appl Phys 2000, V88, P5777 CAPLUS
(7) Franke, E; Thin Solid Films 2001, V288, P283
(8) Gilmore, D; Satellite Thermal Control Handbook 1994, P4
(9) Goldner, R; Proc SPIE 1983, V428, P38 CAPLUS
(10) Goldner, R; Proc SPIE 1991, V1536, P34
(11) Granqvist, C; Appl Phys A 1991, V52, P83
(12) Granqvist, C; Handbook of Inorganic Electrochromic Materials 1995
(13) Granqvist, C; Solar Energy Mat Solar Cells 2000, V60, P201 CAPLUS
(14) Hale, J; Thin Solid Films 1998, V313-314, P205 CAPLUS
(15) Hale, J; Thin Solid Films 1999, V339, P174 CAPLUS
(16) Yan, L; J Vac Sci Technol A 2000, V19, P447
(17) Yan, L; private communication

L65 ANSWER 24 OF 63 CAPLUS
AN 2001:317427 CAPLUS
ED Entered STN: 04 May 2001

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TI   Anti-global warming device
IN   Parise,  Ronald
PA   USA
SO   U.S. Pat. Appl. Publ., Cont.-in-part of Ser. No. US 1999-359108, filed on
     22 Jul 1999, now patented
     CODEN: USXXCO
DT   Patent
LA   English
IC   ICM  H01L035-00
     ICS  H01L035-22
NCL  136201000; 136213000; 136236100
FAN.CNT 5
     PATENT NO.         KIND  DATE            APPLICATION NO.  DATE
     ---------------    ----  --------        ---------------  --------
PI   US 2001000577       A1   20010503        US 2000-735260   20001211
     WO 9850137          A1   19981112        WO 1998-US9076   19980504
         W:  AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE,
             DK, EE, ES, FI, GB, GE, GH, GM, GW, HU, ID, IL, IS, JP, KE, KG,
             KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX,
             NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT,
             UA, UG, US, UZ, VN, YU, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM
         RW: GH, GM, KE, LS, MW, SD, SZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES,
             FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI,
             CM, GA, GN, ML, MR, NE, SN, TD, TG
     WO 9850686          A1   19981112        WO 1998-US9080   19980504
         W:  AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE,
             DK, EE, ES, FI, GB, GE, GH, GM, GW, HU, ID, IL, IS, JP, KE, KG,
             KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX,
             NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT,
             UA, UG, US, UZ, VN, YU, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM
         RW: GH, GM, KE, LS, MW, SD, SZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES,
             FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI,
             CM, GA, GN, ML, MR, NE, SN, TD, TG
     AU 9872836          A1   19981127        AU 1998-72836    19980504
     AU 9872838          A1   19981127        AU 1998-72838    19980504
     AU 9872839          A1   19981127        AU 1998-72839    19980504
     US 6162985          A    20001219        US 1999-359108   19990722
     WO 2004008042       A2   20040122        WO 2001-US45616  20011210
         W:  AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN,
             CO, CR, CU, CZ, DE, DK, DM, DZ, EE, ES, FI, GB, GD, GE, GH, GM,
             HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS,
             LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PL, PT, RO,
             RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ,
             VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM
         RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AT, BE, CH,
             CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR,
             BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG
PRAI US 1997-46027P      P    19970509
     US 1997-933789      A2   19970919
     US 1999-359108      A2   19990722
     US 1997-933664      A    19970917
     US 1997-932577      A    19970919
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     US 1997-933663     A     19970919
     WO 1998-US9076     W     19980504
     WO 1998-US9079     W     19980504
     WO 1998-US9080     W     19980504
     US 2000-735260     A     20001211
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AB A method and **device** for **transmitting thermal energy** from the **surface** of the **earth** into **deep space** to assist in the alleviation of **global warming.** The method comprises arranging a **thermal energy transmitting** material over a terrestrial object, and, positioning said **thermal energy transmitting** material so that a **transmitting surface** thereof faces **deep space**, said material having spectral **surface** properties of high emissivity in a spectral band substantially **transparent** to the **atmosphere** of the earth. The **device** comprises a **thermal energy transmitting** material designed to cover a terrestrial object and positioned with a transmitting **surface** thereof facing **deep space**, said transmitting material having spectral **surface** properties of high emissivity in a spectral band substantially **transparent** to the **atmosphere** of the earth.

L65 ANSWER 25 OF 63 CAPLUS COPYRIGHT 2004 ACS on STN
AN 2001:517795 CAPLUS
DN 135:110893
ED Entered STN: 18 Jul 2001
TI Coating systems on **outer** plates of **space** shuttles for low **high-temperature radiation** ratio
IN Oguri, Kazuyuki
PA Mitsubishi Heavy Industries, Ltd., Japan
SO Jpn. Kokai Tokkyo Koho, 5 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
IC ICM C23C016-30
ICS C23C028-00
CC 57-2 (Ceramics)
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 2001192831	A2	20010717	JP 2000-4562	20000113
PRAI	JP 2000-4562		20000113		

AB The outer plates have a carbonaceous substrate, SiC coating on the outer side, and an inner coating system consisting of successively a SiC coating, Al_2O_3 and/or Y_2SiO_5 interlayer coating, and a Pt coating. The surface heat is prevented from entering into the inner part.
ST coating **outer** plate **space** shuttle; heat prevention **outer** plate **space** shuttle
IT Coating materials
Radiative heat transfer
Space shuttles

(coating systems on **outer** plates of **space** shuttles
for low **high-temperature radiation** ratio)
IT 409-21-2, Silicon carbide, properties 1344-28-1, Alumina, properties
7440-06-4, Platinum, properties 12027-88-2, Yttrium silicate (Y2SiO5)
RL: **DEV (Device component use)**; PRP (Properties); TEM (Technical
or engineered material use); USES (Uses)
(coating containing; coating systems on **outer** plates of
space shuttles for low **high-temperature**
radiation ratio)
IT **7440-44-0**, Carbon, properties
RL: **DEV (Device component use)**; PRP (Properties); TEM (Technical
or engineered material use); USES (Uses)
(outer plate substrate containing; coating systems on **outer**
plates of **space** shuttles for low **high-temp**
. **radiation** ratio)

L65 ANSWER 26 OF 63 WPIX COPYRIGHT 2004 THOMSON DERWENT on STN
AN 2001-181853 [18] WPIX
CR 2000-557725 [50]
DNN N2001-129742 DNC C2001-054174
TI Seed chuck for supporting a seed crystal for dipping in a hot melt, includes a shield that insulates the seed crystal from cooling, and heats the seed crystal with radiant energy emitted from the hot melt.
DC L03 U11
IN AYDELOTT, R M; GROAT, C W
PA (SEHA-N) SEH AMERICA INC
CYC 1
PI US 6183556 B1 20010206 (200118)* 8 C30B035-00
ADT US 6183556 B1 US 1998-166957 19981006
PRAI US 1998-166957 19981006
IC ICM C30B035-00
AB US 6183556 B UPAB: 20010402
NOVELTY - A seed chuck (62) has a main body which includes a dipping support formation (22) for connection to a dipping apparatus, and a seed support formation for supporting a seed crystal (12). A shield (64) is coupled to the main body, that insulates the seed crystal from cooling and heats the seed crystal with radiant energy emitted from a hot melt.
USE - For supporting a seed crystal for dipping in a hot melt.
ADVANTAGE - The inventive seed chuck reduces or eliminates dislocations in seed crystals during growth, and does not need additional external warming **devices.** It controls the energy of the melt to warm the seed crystal by collecting and focusing emissive, **reflective**, and conductive **thermal energy** of the melt and shield.
DESCRIPTION OF DRAWING(S) - The figure is a side cross-section of the inventive seed chuck.
Seed crystal 12
Dipping support formation 22
Seed chuck 62
Shield 64
Dwg.6/6
FS CPI EPI

FA AB; GI
MC CPI: L04-D
EPI: U11-B02B; U11-F02A2

L65 ANSWER 27 OF 63 WPIX COPYRIGHT 2004 THOMSON DERWENT on STN
AN 2001-531114 [59] WPIX
DNN N2001-394334 DNC C2001-158427
TI Optical recording medium comprising substrate, recording layer, protective layer and **heat radiating** layer.
DC L03 T03 W04
IN ICHIMURA, I; KISHIMA, K; KURODA, Y; OSATO, K
PA (SONY) SONY CORP
CYC 26
PI EP 1067533 A2 20010110 (200159)* EN 17 G11B007-24
R: AL AT BE CH CY DE DK ES FI FR GB GR IE IT LI LT LU LV MC MK NL PT RO SE SI
JP 2001023245 A 20010126 (200159) 9 G11B007-24
ADT EP 1067533 A2 EP 2000-113807 20000629; JP 2001023245 A JP 1999-196746 19990709
PRAI JP 1999-196746 19990709
IC ICM G11B007-24
ICS G11B007-004
AB EP 1067533 A UPAB: 20011012
NOVELTY - The **heat radiating** layer (66) is formed on the protective layer (65) to promote dispersion of heat from the recording layer (64). Light is exposed on the recording layer via the side at which the **heat-radiating** layer is positioned to record and/or reproduce information.

DETAILED DESCRIPTION - INDEPENDENT CLAIMS are included for three optical recording and reproduction **devices** comprising a light source, the described optical recording medium an optical system focussing light from the light source to the recording medium.

USE - Optical recording and reproduction **device.**

ADVANTAGE - The medium can be used at a near field which is able to prevent heat build-up at the surface of the medium due to focusing of light and consequent signal loss or damage.

DESCRIPTION OF DRAWING(S) - The diagram shows a cross-section of an optical recording medium as described above.
Substrate 61
reflective layer 62
Second dielectric layer 63
Recording layer 64
First dielectric layer 65
Heat radiating layer 66
Dwg.6/9
FS CPI EPI
FA AB; GI
MC CPI: L03-G04B
EPI: T03-B01C9; W04-C01C

L65 ANSWER 28 OF 63 CAPLUS COPYRIGHT 2004 ACS on STN
AN 2002:478361 CAPLUS

DN 137:97419
ED Entered STN: 26 Jun 2002
TI High temperature fracture toughness of a C/SiC (CVI) composite as used for screw joints in re-entry vehicles
AU Kuntz, Meinhard; Horvath, Juergen; Grathwohl, Georg
CS University of Bremen, Germany
SO High Temperature Ceramic Matrix Composites, [International Conference on High Temperature Ceramic Matrix Composites], 4th, Munich, Germany, Oct. 1-3, 2001 (2001), 469-473. Editor(s): Krenkel, Walter; Naslain, Roger; Schneider, Hartmut. Publisher: Wiley-VCH Verlag GmbH, Weinheim, Germany. CODEN: 69CTOG; ISBN: 3-527-30320-0
DT Conference
LA English
CC 57-2 (Ceramics)
AB The notch sensitivity of the material was assessed both at room temperature and at 1600° in Ar atmospheric to assure the reliability of this material and facilitate the optimized design. This is to simulate the loading conditions of screw joints, e.g. the stress intensification in the vicinity of the screw head or threads. Load-displacement plots at room temperature shows, the material remains linear elastic up to approx. 80% of the maximum load. At 1600°, the behavior is completely different. The material remains elastic until loads far above the maximum at room temperature Then, a sharp knee in the load-**deflection** curve occurs, indicating intense **energy**-consuming effects like fiber sliding in the material. At the load maximum, a sharp load drop occurs, which is most likely initiated by the compliant arrangement of loading levers. At 1600°, a formal toughness of 44,9 MPa m1/2 is obtained. At room temperature, the toughness of the material is significantly lower. The standard tests in the room temperature equipment revealed a value of 19,7 MPa m1/2. Surprisingly, there is a significant discrepancy in the toughness obtained in the standard and the high temperature equipment. The two reference tests with the HT-equipment yielded a formal toughness of 25,3 MPa m1/2. At the present, it is not fully understood why there is this significant effect of the bearing type. Nevertheless, the superior material performance at the high temperature is clearly verified.
ST carbon fiber silicon carbide composite screwed joint fracture toughness; heat shield carbon fiber silicon carbide composite **space** vehicle
IT Carbon fibers, processes
RL: **DEV (Device component use)**; PEP (Physical, engineering or chemical process); PRP (Properties); PYP (Physical process); PROC (Process); USES (Uses)
(composites; high-temperature fracture toughness of carbon fiber-reinforced silicon carbide ceramic composite as used for screw joints in re-entry vehicles)
IT Ceramics
(fiber-reinforced; high-temperature fracture toughness of carbon fiber-reinforced silicon carbide ceramic composite as used for screw joints in re-entry vehicles)
IT Ceramic composites
Fracture surface morphology

Fracture toughness
Heat shields
Microstructure
Space shuttles
(high-temperature fracture toughness of carbon fiber-reinforced silicon carbide ceramic composite as used for screw joints in re-entry vehicles)
IT Joints, mechanical
(screwed; high-temperature fracture toughness of carbon fiber-reinforced silicon carbide ceramic composite as used for screw joints in re-entry vehicles)
IT Stress, mechanical
(thermal; high-temperature fracture toughness of carbon fiber-reinforced silicon carbide ceramic composite as used for screw joints in re-entry vehicles)
IT 409-21-2, Silicon carbide (SiC), processes **7440-44-0**, Carbon, processes
RL: **DEV (Device component use)**; PEP (Physical, engineering or chemical process); PRP (Properties); PYP (Physical process); PROC (Process); USES (Uses)
(high-temperature fracture toughness of carbon fiber-reinforced silicon carbide ceramic composite as used for screw joints in re-entry vehicles)
RE.CNT 6 THERE ARE 6 CITED REFERENCES AVAILABLE FOR THIS RECORD
RE
(1) Chawla, K; Ceramic Matrix Composites 1993
(2) Donnet, J; International Fibre Science and Technology 1990, V10
(3) Evans, A; Compos Sci Technol 1991, V42, P3 CAPLUS
(4) Kuntz, M; Mat Sci Technol 1998, VA250, P313 CAPLUS
(5) Kuntz, M; Risswiderstand keramischer Faserverbundwerkstoffe 1996
(6) Rausch, G; J Am Ceram Soc 2000, V83, P2762 CAPLUS

L65 ANSWER 29 OF 63 CAPLUS COPYRIGHT 2004 ACS on STN
AN 2001:797882 CAPLUS
DN 136:55617
ED Entered STN: 02 Nov 2001
TI Development of the CO2 hermetic compressor
AU Tadano, Masaya; Ebara, Toshiyuki; Oda, Atsushi; Susai, Takashi; Takizawa, Kikuo; Izaki, Hirokazu; Komatsubara, Takeo
CS R&D Headquarters Ecology and Energy Systems Research Center, Sanyo Electric Co., Ltd., Gunma, Japan
SO Final Proceedings of the IIR-Gustav Lorentzen Conference on Natural Working Fluids at Purdue, 4th, West Lafayette, IN, United States, July 25-28, 2000 (2001), Meeting Date 2000, 335-342 Publisher: Ray W. Herric Laboratories, West Lafayette, Indiana.
CODEN: 69BXLK
DT Conference
LA English
CC 47-7 (Apparatus and Plant Equipment)
AB Natural refrigerant was studied as alternatives for HFC under the regulations of **global warming** gases. Especially, **carbon** dioxide is nontoxic, inflammable, and cheap refrigerant,

therefore worldwide research is done in various refrigerating and air-conditioning applications. But working pressure of **carbon** dioxide is very high (high pressure is .apprx. 9-10 MPa, and low pressure is .apprx. 3-4 MPa.). Therefore development of the compressor which can operate with high efficiency under such condition, is expected. A prototype CO2 hermetic compressor is developed for use in **carbon** dioxide refrigerating systems. The compressor has small dimensions (117.2 mm outer diameter, 244.3 mm height, and 2.633 cc displacement). The compressor has two rolling pistons, and it leads to low-vibration and low-noise. In addition, two-stage compression with two cylinders is adopted, because pressure difference is too large to compress in one stage. In first stage, the suction gas is raised up to about 5-6 MPa (intermediate pressure). And inner pressure of the shell case is intermediate pressure to minimize gas leakage between compressing rooms and inner **space** of shell case. As a result, the compressor achieved high efficiency and high-reliability by these technol.

ST **carbon** dioxide hermetic compressor development; refrigerator **carbon** dioxide compressor development; air conditioner **carbon** dioxide compressor development

IT Air conditioners
Compressors
Refrigerating apparatus
(development of CO2 hermetic compressor for refrigerators and air conditioners)

IT 124-38-9, **Carbon** dioxide, uses
RL: **DEV (Device component use)**; TEM (Technical or engineered material use); USES (Uses)
(development of CO2 hermetic compressor for refrigerators and air conditioners)

RE.CNT 3 THERE ARE 3 CITED REFERENCES AVAILABLE FOR THIS RECORD

RE

(1) Hwang, Y; Experimental Evaluation of CO2 Water Heater 1998, IIF-IIR-Sections B and E, P368
(2) Liao, S; Optimal Heat Rejection Pressure in Transcritical Carbon Dioxide Air Conditioning and Heat Pump System 1998, IIF-IIR-Sections B and E, P346
(3) Manzion, J; Development of Carbon Dioxide Environmental Control Unit for The US Army 1998, IIF-IIR-Sections B and E, P297

L65 ANSWER 30 OF 63 CAPLUS COPYRIGHT 2004 ACS on STN
AN 2000:232554 CAPLUS
DN 132:254895
ED Entered STN: 11 Apr 2000
TI Radiator for aerospace
IN Sato, Keiichi; Kawauchi, Keisuke
PA Ishikawajima-Harima Heavy Industries Co., Ltd., Japan
SO Jpn. Kokai Tokkyo Koho, 4 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
IC ICM B64G001-50
ICS F28D015-02
CC 57-8 (Ceramics)

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 2000103400	A2	20000411	JP 1998-273912	19980928
PRAI	JP 1998-273912		19980928		

AB This radiator for use in the aerospace comprises a **heat** pipe and **heat radiation** plates attached to one side of the heat pipe. Carbon-carbon composite plates are uses for the **heat radiation** plates and sandwiched between the **heat** pipe and a cover plate while being joined to them by vacuum soldering. Since the carbon-carbon composite plates are supported in both sides by the heat pipe and the cover plate to heighten the bonding strength of the joined parts. The **radiator** is for **radiating heat** generated in an artificial satellite in the **space.** The carbon-carbon composite plates may be produced by unidirectionally orienting C fibers and fixing the C fibers by C.

ST **radiator** aerospace **heat radiation** carbon plate; carbon fiber composite plate radiator aerospace

IT Carbon fibers, processes
RL: **DEV (Device component use)**; PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(**heat** plate made of; **radiator** comprising **heat radiation** plates and **heat** pipe with high bonding strength for use in aerospace)

IT **Heat** pipes
(of **radiators; radiator** comprising **heat radiation** plates and **heat** pipe with high bonding strength for use in aerospace)

IT **Radiators**
(**radiator** comprising **heat radiation** plates and **heat** pipe with high bonding strength for use in aerospace)

IT **7440-44-0**, Carbon, processes
RL: **DEV (Device component use)**; PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(**heat** plate made of; **radiator** comprising **heat radiation** plates and **heat** pipe with high bonding strength for use in aerospace)

L65 ANSWER 31 OF 63 WPIX COPYRIGHT 2004 THOMSON DERWENT on STN
AN 2000-672503 [65] WPIX
DNN N2000-498615 DNC C2000-203629
TI Cleaning **device** for textile articles using a densified, liquid state treatment gas, comprises a condenser in **heat transmitting** contact with the evaporator chamber, and together with a compressor form a heat pump.
DC F07 X25 X27
IN UHLIN, G
PA (ELEX) ELECTROLUX AB
CYC 91
PI WO 2000056970 A1 20000928 (200065)* EN 18 D06F043-08
RW: AT BE CH CY DE DK EA ES FI FR GB GH GM GR IE IT KE LS LU MC MW NL

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            OA PT SD SE SL SZ TZ UG ZW
         W: AE AL AM AT AU AZ BA BB BG BR BY CA CH CN CR CU CZ DE DK DM EE ES
            FI GB GD GE GH GM HR HU ID IL IN IS JP KE KG KP KR KZ LC LK LR LS
            LT LU LV MA MD MG MK MN MW MX NO NZ PL PT RO RU SD SE SG SI SK SL
            TJ TM TR TT TZ UA UG US UZ VN YU ZA ZW
     AU 2000039920    A  20001009 (200103)              D06F043-08
     EP 1185731       A1 20020313 (200225)  EN          D06F043-08
         R: AL AT BE CH CY DE DK ES FI FR GB GR IE IT LI LT LU LV MC MK NL PT
            RO SE SI
     JP 2002539868    W  20021126 (200307)        18    D06F043-00
     EP 1185731       B1 20040506 (200430)  EN          D06F043-08
         R: AT BE CH CY DE DK ES FI FR GB GR IE IT LI LU MC NL PT SE
```

ADT WO 2000056970 A1 WO 2000-SE527 20000317; AU 2000039920 A AU 2000-39920 20000317; EP 1185731 A1 EP 2000-919212 20000317, WO 2000-SE527 20000317; JP 2002539868 W JP 2000-606826 20000317, WO 2000-SE527 20000317; EP 1185731 B1 EP 2000-919212 20000317, WO 2000-SE527 20000317

FDT AU 2000039920 A Based on WO 2000056970; EP 1185731 A1 Based on WO 2000056970; JP 2002539868 W Based on WO 2000056970; EP 1185731 B1 Based on WO 2000056970

PRAI SE 1999-1002 19990319

IC ICM D06F043-00; D06F043-08

AB WO 200056970 A UPAB: 20001214

NOVELTY - A cleaning **device** for textile articles using a densified, liquid state treatment gas, comprises a condenser being in **heat transmitting** contact with the evaporator chamber. A compressor is organized together with the condenser to form a heat pump intended alone to furnish the heat energy required for evaporation of the liquid in the evaporator.

DETAILED DESCRIPTION - A cleaning **device** for textile articles using a densified, liquid state treatment gas, comprises a treatment chamber (10) and supply tank (18) for densified treatment gas and an evaporator chamber (36). **Spaces** are connected to each other by tubes to permit pressure balance between the different **spaces.** The treatment chamber is filled with liquid state treatment gas from the supply tank. The treatment gas is drained from the treatment chamber to the evaporator chamber. Compressor (46) is arranged, which is adapted to partly bring about complete drainage of gaseous treatment gas from treatment chamber, partly to constitute the driving mechanism during one of the processes including distillation phase where densified treatment gas in the evaporator chamber is given gaseous state and via condenser (44) is conveyed back to the supply tank. The condenser is in **heat transmitting** contact with the evaporator chamber. The compressor is organized together with the condenser to form a heat pump intended alone to furnish the heat energy required for evaporation of the liquid in the evaporator. Preferred Features: The condenser is in heat **transferring** contact with the treatment chamber. It is constituted by a heat exchanger comprising a container, which is applied at the bottom of the treatment chamber, and the interior of which is in flow-connection to the interior of the treatment chamber. A tube passes through the container, and during a course of evaporation, gaseous **carbon** dioxide is conveyed from the treatment chamber via the compressor for condensing.

USE - For cleaning of textile articles.
ADVANTAGE - **Carbon** dioxide is circulated in the system and, after cleansing, is brought back to the supply tank. Energy released during the process is utilized in the process steps instead of utilizing energy from the outside.
DESCRIPTION OF DRAWING(S) - The figure schematically shows a **device** for cleaning textiles in liquid CO2.
Treatment chamber 10
Supply tank 18
Evaporator chamber 36
Condenser 44
Compressor 46
Dwg.1/2
FS CPI EPI
FA AB; GI
MC CPI: F03-J04
EPI: X25-T; X27-D01

L65 ANSWER 32 OF 63 WPIX COPYRIGHT 2004 THOMSON DERWENT on STN
AN 2000-182994 [16] WPIX
DNC C2000-057458
TI Potting of tubes to achieve a seal between the tubes' outside involves aligning the tubes in a housing, placing a spacer and layer of potting material, solidifying the latter and removing the former.
DC A88 A96 D15 J01
IN LEONARD, R J
PA (TERU) TERUMO CARDIOVASCULAR SYSTEMS CORP
CYC 87
PI WO 2000006357 A1 20000210 (200016)* EN 49 B29C031-10
RW: AT BE CH CY DE DK EA ES FI FR GB GH GM GR IE IT KE LS LU MC MW NL OA PT SD SE SL SZ UG ZW
W: AE AL AM AT AU AZ BA BB BG BR BY CA CH CN CU CZ DE DK EE ES FI GB GD GE GH GM HR HU ID IL IN IS JP KE KG KP KR KZ LC LK LR LS LT LU LV MD MG MK MN MW MX NO NZ PL PT RO RU SD SE SG SI SK SL TJ TM TR TT UA UG UZ VN YU ZA ZW
AU 9953195 A 20000221 (200029) B29C031-10
US 6113782 A 20000905 (200044) B01D063-06
EP 1100665 A1 20010523 (200130) EN B29C031-10
R: AT BE CH CY DE DK ES FI FR GB GR IE IT LI LU MC NL PT SE
JP 2003520617 W 20030708 (200347) 47 A61M001-18
ADT WO 2000006357 A1 WO 1999-US16682 19990728; AU 9953195 A AU 1999-53195 19990728; US 6113782 A US 1998-123696 19980728; EP 1100665 A1 EP 1999-938784 19990728, WO 1999-US16682 19990728; JP 2003520617 W WO 1999-US16682 19990728, JP 2000-562191 19990728
FDT AU 9953195 A Based on WO 2000006357; EP 1100665 A1 Based on WO 2000006357; JP 2003520617 W Based on WO 2000006357
PRAI US 1998-123696 19980728
IC ICM A61M001-18; B01D063-06; B29C031-10
ICS A61M001-20; B01D053-22; B01D061-28; B01D063-00; B01D063-02; B01D067-00
AB WO 200006357 A UPAB: 20000330
NOVELTY - The potting of tubular elements comprises aligning the elements

within a housing, placing spacer material into the housing to cover the elements' first ends, covering the spacer's first surface by placing a first layer of potting material into housing, solidifying the first layer to seal between each element and removing the spacer, which is fluid at the time of placing, to expose the first ends.

DETAILED DESCRIPTION - An INDEPENDENT CLAIM is also included for a **device**, e.g. a filter, a pheresis unit, an oxygenator or a heat exchanger, for use in treating a fluid flow, comprising a housing (12) with a fluid inlet and outlet, an array of tubular elements (70) within the housing and a layer of potting material (82a) between each element and supporting the elements in a fixed position.

USE - To achieve a seal between the outsides of the tubes. The method may be used in oxygenators to seal tubes that **transmit** gas or a **heat transfer** fluid from blood which passes over the outside surface of the tubes. It may also be used in pheresis **devices** that separate a component from blood. It may be used in medical **devices** such as dialyzers, hemoconcentrators, membrane cell washers, hemo-filtration **devices** and fluid cell power supplies. It may also be applicable to non-medical **devices** such as chemical heat exchangers, reverse osmosis cells for desalinating water, **devices** for adding or removing gases from fluids such as for water treatment or carbonation adjustment.

ADVANTAGE - Potting minimizes leakage, helps limit wicking of the potting compound along the fibers, eliminates bubbles and tightly packs the potting compound around the fibers. The spacer material can be recycled for reuse in the next potting operation. The method may be performed without a centrifuge and gravity may be used instead. An alternative method allows potting of the fiber bundle to occur at different time or location than sealing the fiber bundle to the housing, so the housing of the final oxygenator would not be required during potting. Manifolding of gas and **heat transfer** fluid is simple and **direct**, thus reducing flow disturbance and pressure loss. The method avoids having to cut through the potting compound, which might be rigid, by cutting only the fibers.

DESCRIPTION OF DRAWING(S) - The figure shows the oxygenator at a step of its manufacture.

Housing 12
Tubular elements 70
Spacer material 80a
Layer of potting material 82a
Dwg.9/18

FS CPI
FA AB; GI
MC CPI: A12-H02; A12-H02C; D04-A01E; D04-A01K; D04-B07F; J01-C03A; J01-C03B; J01-C03B1; J01-D01

L65 ANSWER 33 OF 63 CAPLUS COPYRIGHT 2004 ACS on STN
AN 2000:361987 CAPLUS
DN 133:124084
ED Entered STN: 31 May 2000
TI Carbon-carbon thermal doublers for **spacecraft**
AU Rawal, Suraj P.; Rasbach, Chuck; Shih, Wei

CS Lockheed Martin Astronautics, Denver, CO, USA
SO Advanced Materials & Processes (2000), 157(5), 71-73
CODEN: AMAPEX; ISSN: 0882-7958
PB ASM International
DT Journal
LA English
CC 57-8 (Ceramics)
Section cross-reference(s): 52
AB Sandwich panels for **spacecraft** are typically constructed of composite face sheets and an aluminum honeycomb core. Heat generated by avionics boxes, batteries, and components mounted on the panels has to be dissipated/radiated by the support panel structure. In addition to this heat load, mech. stresses are encountered. Therefore, the panel must withstand both structural and thermal effects. If a thermal doubler is needed to dissipate heat from an electronics box, it must also provide high thermal conductivity, low coefficient of thermal expansion that is equivalent to the face-sheet,
and lower elastic modulus than that of the face-sheet. Lockheed-Martin conducted extensive material trade studies, and identified a low-modulus carbon fiber-carbon matrix composite as an optimal material for thermal doublers. Low-cost two-and three-dimensional carbon-carbon composites weigh one-third less than aluminum, with nearly equivalent thermal conductivity This
article presents the typical properties of C-C thermal doublers, and reports the results of thermal performance testing that enabled their insertion into **spacecraft.**
ST carbon fiber matrix composite panel thermal doubler **spacecraft**;
heat dissipating carbon fiber matrix composite panel **spacecraft**
IT Carbon fibers, properties
RL: **DEV (Device component use)**; PRP (Properties); USES (Uses)
(composites, panels; properties and performance of heat dissipating carbon-carbon thermal doublers for **spacecraft**)
IT **Radiative heat** transfer
Radiative heat transfer
(convective; properties and performance of heat dissipating carbon-carbon thermal doublers for **spacecraft**)
IT **Space** vehicles
Thermal conductivity
(properties and performance of heat dissipating carbon-carbon thermal doublers for **spacecraft**)
IT Convective **heat** transfer
Convective **heat** transfer
(**radiative**; properties and performance of **heat** dissipating carbon-carbon thermal doublers for **spacecraft**)
IT **7440-44-0**, Carbon, properties
RL: **DEV (Device component use)**; PRP (Properties); USES (Uses)
(composites; properties and performance of heat dissipating carbon-carbon thermal doublers for **spacecraft**)

L65 ANSWER 34 OF 63 CAPLUS COPYRIGHT 2004 ACS on STN
AN 1999:425939 CAPLUS
DN 131:64651

ED Entered STN: 09 Jul 1999
TI Influence of electrons reflected from a target on the operation of diode and triode electron sources
AU Engelko, V.; Kuznetsov, V.; Mueller, G.; Viazmenova, G.
CS Efremov Institute Electrophysical Apparatus, St. Petersburg, 189631, Russia
SO Wissenschaftliche Berichte - Forschungszentrum Karlsruhe (1999), FZKA 6205, 64-70
CODEN: WBFKF5; ISSN: 0947-8620
DT Report
LA English
CC 71-1 (Nuclear Technology)
AB When an electron source and a target are immersed in an external magnetic field electrons reflected from the target can not disappear but move back along the magnetic force lines and reenter the source region, where they are stopped by the elec. field and rereflected to the target. The penetration of these electrons into the source can lead to a distortion of the elec. field and through this to changes of the equilibrium c.d. emitted from the cathode. First results from calcns. of the equilibrium current densities occurring in electron diodes and triodes under these conditions are presented. The **space** charge d. distribution resulting from reflected electrons has been calculated taking into account their real energy spectrum obtained from Monte-Carlo simulations. It was found that the penetration of reflected electrons into a diode can significantly decrease the equilibrium c.d. When the electrons are **reflected** back with their incident **energy**, the maximum reduction factor for the c.d. is between 3 and 2 for reflection coeffs. of k = 1 and k = 0.5, resp. For tungsten the c.d. depression is around 1.5 at more realistic energy spectra. The results of these calcns. are in a good agreement with exptl. data. The anal. performed shows that the consideration of reflected electrons is necessary if accurate calcns. of the specific beam energy deposition in the target are desired.
ST diode triode electron source operation reflection; simulation diode triode electron source operation reflection
IT Simulation and Modeling, physicochemical
(Monte Carlo; of effects of electrons reflected from a target on the operation of diode and triode electron sources)
IT Electron sources
Space charge
(effects of electrons reflected from a target on the operation of diode and triode electron sources)
IT **7440-44-0**, Carbon, uses
RL: **DEV (Device component use)**; PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(anode material; effects of electrons reflected from a target on the operation of diode and triode electron sources)
IT 7440-33-7, Tungsten, uses
RL: **DEV (Device component use)**; PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(anode material; of effects of electrons reflected from a target on the operation of diode and triode electron sources)
IT 183748-02-9, Electron

RL: PEP (Physical, engineering or chemical process); PROC (Process)
(effects of electrons reflected from a target on the operation of diode and triode electron sources)

RE.CNT 3 THERE ARE 3 CITED REFERENCES AVAILABLE FOR THIS RECORD

RE
(1) Dressel, R; Phys Rev 1962, V144, P332
(2) Mueller, G; Proc 11-th Int Conf High Power Particle Beams 1996, V1, P267
(3) Zaitsev, N; Sov J Plasma Phys 1982, V8(5), P515

L65 ANSWER 35 OF 63 WPIX COPYRIGHT 2004 THOMSON DERWENT on STN

AN 1999-326592 [27] WPIX

DNC C1999-096573

TI Highly efficient, miniaturizable photosynthesis culture apparatus, for **carbon** dioxide fixation using particularly sunlight to remove waste **carbon** dioxide e.g. from thermal power plants.

DC D16 E36

IN HONAMI, N; KANAI, K; KONDO, J; MIYATAKE, K; NAKANO, Y; TATSUMI, M; KONDOU, J

PA (MATU) MATSUSHITA ELECTRIC IND CO LTD; (HONA-I) HONAMI N; (KANT) KANSAI DENRYOKU KK; (KOND-I) KONDO J; (MATU) MATSUSHITA DENKI SANGYO KK; (MIYA-I) MIYATAKE K; (NAKA-I) NAKANO N; (KOND-I) KONDOU J; (NAKA-I) NAKANO Y

CYC 4

PI	WO 9920738	A1 19990429	(199927)*	JA	31	C12M001-00
	W: CN RU US					
	JP 11113558	A 19990427	(199927)		8	C12M001-00
	CN 1242801	A 20000126	(200024)			C12M001-00
	US 6287852	B1 20010911	(200154)			C12M001-42

ADT WO 9920738 A1 WO 1998-JP4575 19981012; JP 11113558 A JP 1997-285525 19971017; CN 1242801 A CN 1998-801529 19981012; US 6287852 B1 WO 1998-JP4575 19981012, US 1999-331331 19990617

FDT US 6287852 B1 Based on WO 9920738

PRAI JP 1997-285525 19971017

IC ICM C12M001-00; C12M001-42
ICS C12M003-00; C12N001-00; C12N005-06

AB WO 9920738 A UPAB: 20011203
NOVELTY - A photosynthesis culture apparatus comprising a **carbon** dioxide fed culture tank for an aqueous solution containing vegetable microorganisms and a culture light, is new.

DETAILED DESCRIPTION - A photosynthesis culture apparatus comprises a culture tank for an aqueous solution containing vegetable microorganisms, **carbon** dioxide feed **device** to supply **carbon** dioxide inside the incubation tank, and flat sheet-like light-guide plate so disposed as to face a culture light reception surface on the side of the tank, and a light-reception panel fitted to the upper end face of the light-guide plate. The light-guide plate has a function of converting the direction of light incident from the light-reception panel to a substantially orthogonal direction and uniformly guiding the rays of light to the culture light reception surface of the tank.

An INDEPENDENT CLAIM is also included for an integrated photosynthesis culture apparatus containing several of the above apparatuses, with the culture light reception surface of the culture tank arranged in parallel and all the water pipes, product **transfer**

pipes and **carbon** dioxide supplying pipes linked through out the various culture apparatuses.

USE - The apparatus can be used to fix **carbon** dioxide using e.g. sunlight with algae or other vegetable microorganisms from e.g. thermal power plants to stop **global warming** and to improve environment.

ADVANTAGE - Such apparatus is highly efficient and miniaturizable, with improved control on the photosynthesis to give higher yielding product.

DESCRIPTION OF DRAWING(S) - Structure of a photosynthesis culture apparatus.

Vegetable microorganism 1
culture tank 3
culture light reception surface 4
carbon dioxide feed means 5
light guide plate 8
diffusion surface 10
light convergence portion 12
external light reception surface 13
solar light 14
diffused light 15
Dwg.1/8

FS CPI
FA AB; GI; DCN
MC CPI: D05-H02; E11-Q02; E31-N05C

L65 ANSWER 36 OF 63 WPIX COPYRIGHT 2004 THOMSON DERWENT on STN
AN 1999-550457 [46] WPIX
DNN N1999-407285 DNC C1999-160478
TI Composite heat sink board structure for supporting electronic and microwave components in a chassis, e.g. in **space** applications.
DC A85 L03 V04
IN BULANTE, R A; CONWELL, T A; DUNCAN, G L; LEE, S H; QUAN, D; STAFFORD, J P
PA (HUGA) HUGHES ELECTRONICS CORP
CYC 1
PI US 5949650 A 19990907 (199946)* 9 H05K007-20
ADT US 5949650 A US 1998-145847 19980902
PRAI US 1998-145847 19980902
IC ICM H05K007-20
AB US 5949650 A UPAB: 19991110

NOVELTY - The board structure comprises a thermal/structural base (26) including a composite core layer (28) of unidirectionally oriented **carbon** fibers (34) in a resin matrix (36) and bonded reinforcement layers (42,48) comprising a resin matrix with mainly transverse oriented **carbon** fibers (44,50). Printed wiring boards (55) with bonded components are adhesively bonded to the base. Copper contact strips (62) are bonded to the base to serve as electrical grounding contacts.

USE - For mounting heat-generating components, e.g. integrated circuits, and **heat**- dissipating components, e.g. **radiators**, and **transferring heat** toward **heat** conductors at the ends of the board structure. The boards are assembled in a chassis of a high power electronic or microwave

device to be used in **space** applications or located in
hermetic packages where heat removal to the atmosphere is not possible.

ADVANTAGE - The composite board structure provides substantially improved properties compared with aluminum and copper heat sinks, i.e. higher thermal conductivity, stiffness and strength combined with lower weight. It can be made at relatively low cost using the techniques disclosed and is fully **space** qualified, with low volatiles evolution in a **space** environment.

DESCRIPTION OF DRAWING(S) - The drawing shows an enlarged schematic perspective view of the composite heat sink board structure.

Thermal/structural base 26
Composite core layer 28
Oriented **carbon** fibers 34,44,50
Resin matrix 36
Reinforcement layers 42,48
Printed wiring boards 55
Copper contact strips. 62

Dwg.3/5

FS CPI EPI
FA AB; GI
MC CPI: A12-E07; A12-T03; L03-G
EPI: V04-T03

L65 ANSWER 37 OF 63 CAPLUS COPYRIGHT 2004 ACS on STN
AN 1999:292373 CAPLUS
DN 130:298620
ED Entered STN: 13 May 1999
TI Enhanced thermal conductance of ORU radiant fin thermal interface using carbon brush materials
AU Seaman, Christopher L.; Ellman, Brett M.; Knowles, Timothy R.
CS Energy Science Laboratories Inc., San Diego, CA, 92121-2232, USA
SO AIP Conference Proceedings (1999), 458(Space Technology and Applications International Forum--1999, Pt. 1), 565-571
CODEN: APCPCS; ISSN: 0094-243X
PB American Institute of Physics
DT Journal
LA English
CC 48-5 (Unit Operations and Processes)
AB The Energy Science Labs. Inc. (ESLI) has developed a highly compliant carbon brush thermal interface with good conductive heat transfer during a phase 2 SPIR contract with NASA JSC. This lightweight brush can be retrofitted to the radiant fin thermal interface (RFTI), baselined as the interface for the International **Space** Station (ISS) Orbital Replaceable Units (ORU's), without changing the fin structure. Radiant heat transfer is thereby augmented by conductive heat transfer, dramatically increasing total thermal conductance of the interface. ESLI is now addressing critical issues concerning its actual use on the ISS in a Phase 3 program. These issues include carbon fiber debris, mech. and thermal integrity, mech. insertion and removal forces, and optimization for best thermal performance. Results thus far are encouraging. In this paper, thermal conductance and insertion/extraction force measurements on prototype specimens are presented.

ST thermal conductance enhancement orbital replaceable unit; radiant fin thermal interface orbital replaceable unit; carbon brush material radiant fin thermal interface; conductive heat transfer carbon brush thermal interface; heat transfer radiant fin thermal interface
IT Thermal conductivity
(enhanced thermal conductance of orbital replaceable units radiant fin thermal interface by using carbon brush materials)
IT Brushes
Conductive heat transfer
Radiative heat transfer
(**heat** transfer of carbon brush orbital replaceable units radiant fin thermal interface)
IT **7440-44-0**, Carbon, processes
RL: **DEV (Device component use)**; PEP (Physical, engineering or chemical process); PRP (Properties); PROC (Process); USES (Uses)
(enhanced thermal conductance of orbital replaceable units radiant fin thermal interface by using carbon brush materials)
RE.CNT 3 THERE ARE 3 CITED REFERENCES AVAILABLE FOR THIS RECORD
RE
(1) Madhusudana; Thermal Contact Conductance 1996
(2) Peterson, G; Determination of the Thermal Contact Conductance and Adhesion Characteristics of Coldplate Thermal Test Pads 1990
(3) Stobb, C; Overall Contact Conductance of a Prototype Parallel Fin Thermal Interface 1992, AIAA-92-2846

L65 ANSWER 38 OF 63 CAPLUS COPYRIGHT 2004 ACS on STN
AN 1999:574106 CAPLUS
DN 131:278124
ED Entered STN: 13 Sep 1999
TI The LET dependence of LiF:Mg,Ti dosemeters and its application for LET measurements in mixed radiation fields
AU Schoner, W.; Vana, N.; Fugger, M.
CS Atominstitute of the Austrian Universities, Vienna, A-1020, Austria
SO Radiation Protection Dosimetry (1999), 85(1-4, Solid State Dosimetry, Pt. 2), 263-266
CODEN: RPDODE; ISSN: 0144-8420
PB Nuclear Technology Publishing
DT Journal
LA English
CC 71-7 (Nuclear Technology)
Section cross-reference(s): 8
AB Several types of standard TLDs were irradiated in various fields of high energy heavy ions and the TL emission in the high temperature region (peaks 6 and 7) was analyzed in comparison with that of 60Co radiation. The parameter determined is defined as the high temperature ratio (HTR).
Irradiations
were carried out in the JINR (Dubna) with fluoride ions in the energy range from 65 to 275 MeV.amu-1 and carbon ions with energies from 100 to 3650 MeV.amu-1. Addnl., irradiations with protons (10 and 62 MeV) were performed. The results show the well known decrease of peak 5 efficiency with increasing LET of the absorbed radiation. The LET dependence of the parameter HTR and of the peak 5 efficiency in the range from 0.35 up to

180 keV.μm-1 are presented. Based on these calibrations, the HTR method allows the measurement of the average LET in mixed radiation fields and therefore the estimation of biol. relevant dose. Results from measurements on the **space** station MIR are also considered.

ST LET dependence thermoluminescent dosimeter mixed radiation field; linear **energy** transfer dependence thermoluminescent dosimeter mixed **radiation** field

IT Heavy ion beams
Heavy ions
Ion bombardment
Linear energy transfer
Radiation shielding
Space travel
Thermoluminescence
Thermoluminescent dosimeters
(LET dependence of LiF:Mg,Ti dosimeters and its application for LET measurements in mixed radiation fields)

IT Gamma ray
(irradiation; LET dependence of LiF:Mg,Ti dosimeters and its application for LET measurements in mixed radiation fields)

IT Dosimetry
(thermoluminescent; LET dependence of LiF:Mg,Ti dosimeters and its application for LET measurements in mixed radiation fields)

IT 7789-24-4, TLD-100, uses 14885-65-5, TLD-600 17409-87-9, TLD-700
RL: **DEV (Device component use)**; PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(LET dependence of LiF:Mg,Ti dosimeters and its application for LET measurements in mixed radiation fields)

IT 7439-95-4, Magnesium, uses 7440-32-6, Titanium, uses
RL: MOA (Modifier or additive use); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(LET dependence of LiF:Mg,Ti dosimeters and its application for LET measurements in mixed radiation fields)

IT **7440-44-0D**, Carbon, ions, uses 7782-41-4D, Fluorine-19, ions, uses 12586-31-1, Neutron 12586-59-3, Proton 12587-46-1, Alpha-particle
RL: NUU (Other use, unclassified); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(LET dependence of LiF:Mg,Ti dosimeters and its application for LET measurements in mixed radiation fields)

IT 10198-40-0, Cobalt-60, uses
RL: NUU (Other use, unclassified); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(source; LET dependence of LiF:Mg,Ti dosimeters and its application for LET measurements in mixed radiation fields)

RE.CNT 15 THERE ARE 15 CITED REFERENCES AVAILABLE FOR THIS RECORD

RE
(1) Budd, T; Phys Med Biol 1979, V24, P71 CAPLUS
(2) Busuoli, G; Phys Med Biol 1970, V15, P673 CAPLUS
(3) Driscoll, C; Phys Med Biol 1978, V23(4), P777 CAPLUS
(4) Egger, E; private communications from E Egger
(5) Horowitz, Y; Phys Med Biol 1979, V24, P1268 CAPLUS

(6) Hubert, F; At Nucl Data Tables 1990, V45(1)
(7) Janni, J; At Nucl Data Tables 1982, V27, P147 CAPLUS
(8) Noll, M; Proc International Congress of IRPA9 1996, V2, P253
(9) Noll, M; Radiat Prot Dosim 1996, V66(2), P119
(10) Schoner, W; Thesis University for Technology 1997
(11) Vana, N; Int Astronautical Federation 1994, IAF/IAA-94-G.2, P139
(12) Vana, N; Nucl Tracks Radiat Meas 1988, V14(1/2), P181
(13) Vana, N; Proc 2nd Italian-Austrian Radiation Protection Symposium 1991
(14) Vana, N; Proc Int Space Year Conference 1992, ISY-4, P193
(15) Vana, N; Radiat Prot Dosim 1996, V66(2), P145

L65 ANSWER 39 OF 63 CAPLUS COPYRIGHT 2004 ACS on STN
AN 1999:420294 CAPLUS
DN 131:77516
ED Entered STN: 08 Jul 1999
TI Study on CO2 removal technology from flue gas of thermal power plant by physical adsorption method
AU Ishibashi, Michio; Otake, Kuninobu; Kanamori, Satoru; Yasutake, Akinori
CS Energy & Environment Research & Development Center, Tokyo Electric Power Company, Japan
SO Greenhouse Gas Control Technologies, Proceedings of the International Conference on Greenhouse Gas Control Technologies, 4th, Interlaken, Switz., Aug. 30-Sept. 2, 1998 (1999), Meeting Date 1998, 95-100. Editor(s): Eliasson, Baldur; Riemer, Pierce; Wokaun, Alexander. Publisher: Elsevier, Oxford, UK.
CODEN: 67TZAN
DT Conference
LA English
CC 59-4 (Air Pollution and Industrial Hygiene)
Section cross-reference(s): 51
AB The Tokyo Elec. Power Company (TEPCO) and Mitsubishi Heavy Industries, Ltd., emphasize the importance of environmental problems and researched solns. to the problem of **global warming** due to increased atmospheric CO2 concns. As a possible technol. solution, CO2 removal and recovery from boiler exhaust gases was assessed. The PTSA (pressure and temperature swing adsorption) phys. adsorption method, using a combination of heating and desorption, is expected to deliver higher energy saving efficiency than the conventional PSA (pressure swing adsorption) method. Technol. to recover CO2 from thermal power stations was conducted at a phys. adsorption pilot plant (processed gas volume = 1,000 Nm3/h; 1/1,000 of exhaust gas volume from a 265 MW coal-oil-mixture fired boiler) at TEPCO's Yokosuka Thermal Power Station and test-operated from Dec. 1991 to Mar. 1997. Pelletized Ca-X type adsorbent was used, achieving a test target CO2 removal ratio of 90% and a purity of recovered CO2 of 99%. Also, >5,000 total hours of pilot test operation was conducted, including 2,000 h continuous operation. Continuous operation results demonstrated the achievability of stable operation at the above target values, showed no significant effect of trace pollutants such as SOx on adsorbent performance, and confirmed the applicability of the PTSA method to coal-fired exhaust gases. Furthermore, initial adsorbent performance was essentially maintained after 5,000 h of pilot plant operation. Based on

pilot plant field results, energy required for CO2 recovery was 40% of power output; since this is high, its reduction is being studied by decreased pressure drop, achieved by changing the adsorbent from pelletized to honeycomb shape. The change to honeycomb shape will also help reduce equipment size; it currently requires a large amount of **space.** For this purpose, bench scale research on adsorbents from the standpoint of performance was continued, and a bench scale test apparatus for adsorbents was installed.

ST **carbon** dioxide removal boiler flue gas; coal fired power generation flue gas; phys adsorption flue gas **carbon** dioxide; pressure temp swing adsorption **carbon** dioxide; air pollution control **carbon** dioxide removal; CaX zeolite sorbent flue gas **carbon** dioxide

IT X zeolites
RL: **DEV (Device component use)**; PRP (Properties); USES (Uses)
(CaX, adsorbent; adsorbent design effect on **carbon** dioxide removal/recovery from coal-fired power generating boiler flue gas using pressure and temperature swing adsorption)

IT Fuel oil
(adsorbent design effect on **carbon** dioxide removal/recovery from coal-fired power generating boiler flue gas using pressure and temperature swing adsorption)

IT Coal, uses
RL: NUU (Other use, unclassified); USES (Uses)
(adsorbent design effect on **carbon** dioxide removal/recovery from coal-fired power generating boiler flue gas using pressure and temperature swing adsorption)

IT Power
(coal-fired generation of; adsorbent design effect on **carbon** dioxide removal/recovery from coal-fired power generating boiler flue gas using pressure and temperature swing adsorption)

IT Flue gases
(coal-fired power generation; adsorbent design effect on **carbon** dioxide removal/recovery from coal-fired power generating boiler flue gas using pressure and temperature swing adsorption)

IT Flue dust
(coal; adsorbent design effect on **carbon** dioxide removal/recovery from coal-fired power generating boiler flue gas using pressure and temperature swing adsorption)

IT Air pollution
(control; adsorbent design effect on **carbon** dioxide removal/recovery from coal-fired power generating boiler flue gas using pressure and temperature swing adsorption)

IT Adsorption
(pressure and temperature swing; adsorbent design effect on **carbon** dioxide removal/recovery from coal-fired power generating boiler flue gas using pressure and temperature swing adsorption)

IT 124-38-9P, **Carbon** dioxide, processes
RL: PEP (Physical, engineering or chemical process); POL (Pollutant); PUR (Purification or recovery); REM (Removal or disposal); OCCU (Occurrence); PREP (Preparation); PROC (Process)
(adsorbent design effect on **carbon** dioxide removal/recovery

from coal-fired power generating boiler flue gas using pressure and temperature swing adsorption)

IT 7732-18-5, Water, processes 7782-44-7, Oxygen, processes
RL: FMU (Formation, unclassified); PEP (Physical, engineering or chemical process); FORM (Formation, nonpreparative); PROC (Process)
(flue gas; adsorbent design effect on **carbon** dioxide removal/recovery from coal-fired power generating boiler flue gas using pressure and temperature swing adsorption)

IT 7446-09-5, Sulfur oxide (unspecified), processes 7727-37-9, Nitrogen, processes 11104-93-1, Nitrogen oxide, processes
RL: FMU (Formation, unclassified); PEP (Physical, engineering or chemical process); POL (Pollutant); FORM (Formation, nonpreparative); OCCU (Occurrence); PROC (Process)
(flue gas; adsorbent design effect on **carbon** dioxide removal/recovery from coal-fired power generating boiler flue gas using pressure and temperature swing adsorption)

RE.CNT 4 THERE ARE 4 CITED REFERENCES AVAILABLE FOR THIS RECORD

RE
(1) Ishibashi, M; 28th Autumn Conf 1995, PS204
(2) Ishibashi, M; IEA Greenhouse Gases: Mitigations Option Conference 1995, P929
(3) Nawata, H; MHI Technological Bulletin 1992, V29(4) CAPLUS
(4) Yasutake, A; Lecture on Thermal & Nuclear Power Generation Technology 1998

L65 ANSWER 40 OF 63 WPIX COPYRIGHT 2004 THOMSON DERWENT on STN
AN 1998-523662 [45] WPIX
DNC C1998-157328
TI Tubular furnace for cracking hydrocarbon(s) in the presence of steam - comprising two layers of tubes and a thin body between the layers which restricts the flow of combustion gas from burners below the layers.
DC A41 E17 H04
IN LENGLET, E
PA (PROC-N) PROCEDES PETROLIERS & PETROCHIM
CYC 1
PI FR 2761371 A1 19981002 (199845)* 17 C10G009-20
ADT FR 2761371 A1 FR 1997-3893 19970328
PRAI FR 1997-3893 19970328
IC ICM C10G009-20
ICS C01B003-34; C07C004-04; C07C011-04; C07C011-06
AB FR 2761371 A UPAB: 19981111
Tubular furnace for **heating** by **radiation** for the thermal decomposition of hydrocarbons in the presence of water vapour including a radiation zone with at least two parallel layers of vertical tubes circulating a mixture of hydrocarbons and steam, each of the two layers being heated from two sides by flows of combustion gases which are rising overall. There is at least one row of burners arranged vertically in the lower part of the radiation zone and emitting flows of combustion gases in the **space** between the two layers. The radiation zone has a lower principal zone (1) of higher thermal **transfer** and an upper secondary zone (2) with a relatively low thermal **transfer** above the principal zone. The secondary zone also acts as a collection zone for the combustion gases to evacuate them through at least one

convection zone (3). The principal and secondary zones are crossed by the layers of tubes. The furnace also includes a body (10) of relatively small thickness relative to its other dimensions, placed between the layers of tubes and between the principal and secondary zones to form a restriction which accelerates the combustion gases and allows their **transfer** from the principal zone to the secondary zone through at least two elongated sections on either side of the body.

USE - Used for the steam cracking of hydrocarbons e.g. ethane, propane, butane, naphtha, or diesels to produce ethylene or propylene, and for the steam reforming of hydrocarbons such as methane to produce hydrogen or hydrogen/**carbon** monoxide mixtures.

ADVANTAGE - Lower pressure losses and a lighter **device.**

Dwg.1/5

FS CPI
FA AB; GI; DCN
MC CPI: A01-D00D; E10-J02C3; E31-A01; H04-B01

L65 ANSWER 41 OF 63 WPIX COPYRIGHT 2004 THOMSON DERWENT on STN
AN 1998-288567 [26] WPIX
DNC C1998-089399
TI Heat and/or material exchanger using rotating **deflectors** to mix gases - where the **deflectors** are curved, folded, pleated or pierced sheets stacked in layers with the gases passing between them.
DC E36 H02 J01 J07 K08 P52 Q75 Q78
IN LEHMAN, J; WERLEN, E; LEHMAN, J Y; WERLIN, E
PA (AIRL) AIR LIQUIDE SA
CYC 36
PI EP 845293 A1 19980603 (199826)* FR 22 B01J019-32
R: AL AT BE CH DE DK ES FI FR GB GR IE IT LI LT LU LV MC MK NL PT RO SE SI

FR 2756369	A1	19980529	(199828)			F28C003-00
CA 2222084	A	19980528	(199838)			B01J019-32
AU 9745362	A	19980604	(199839)			B01D003-22
ZA 9710351	A	19980826	(199840)		36	F28C000-00
JP 10244148	A	19980914	(199847)		16	B01J019-30
FR 2763519	A1	19981127	(199903)			B01J019-32
CZ 9801556	A3	19981216	(199904)			B01D003-32
NO 9802286	A	19981123	(199905)			F28F013-00
KR 98042647	A	19980817	(199938)			F25J005-00
US 5996974	A	19991207	(200004)			B01F003-04
AU 717931	B	20000406	(200027)			B01D003-22
MX 9804030	A1	19990601	(200058)			F28F001-00
BR 9806602	A	20010313	(200118)			B01J019-32
TW 422735	A	20010221	(200138)			B01D059-16
US 6266880	B1	20010731	(200146)			B23P015-26
CN 1184000	A	19980610	(200254)			B01J019-30
EP 845293	B1	20030813	(200355)	FR		B01J019-32

R: BE DE ES FR GB IT NL SE

MX 205694	B	20011218	(200362)	F28F001-00
DE 69724080	E	20030918	(200369)	B01J019-32

ADT EP 845293 A1 EP 1997-402830 19971125; FR 2756369 A1 FR 1996-14606 19961128; CA 2222084 A CA 1997-2222084 19971125; AU 9745362 A AU

1997-45362 19971125; ZA 9710351 A ZA 1997-10351 19971117; JP 10244148 A JP 1997-326772 19971127; FR 2763519 A1 FR 1997-6257 19970522; CZ 9801558 A3 CZ 1998-1558 19980520; NO 9802286 A NO 1998-2286 19980520; KR 98042647 A KR 1997-61775 19971121; US 5996974 A US 1997-880716 19970623; AU 717931 B AU 1997-45362 19971125; MX 9804030 A1 MX 1998-4030 19980521; BR 9806602 A BR 1998-6602 19980521; TW 422735 A TW 1998-107800 19980520; US 6266880 B1 Div ex US 1997-880716 19970623, US 1999-430251 19991029; CN 1184000 A CN 1997-122956 19971126; EP 845293 B1 EP 1997-402830 19971125; MX 205694 B MX 1998-4030 19980521; DE 69724080 E DE 1997-624080 19971125, EP 1997-402830 19971125

FDT AU 717931 B Previous Publ. AU 9745362; US 6266880 B1 Div ex US 996974; DE 69724080 E Based on EP 845293

PRAI FR 1997-6257 19970522; FR 1996-14606 19961128

IC ICM B01D003-22; B01D003-32; B01D059-16; B01F003-04; B01J019-30; B01J019-32; B23P015-26; F25J005-00; F28C000-00; F28C003-00; F28F001-00; F28F013-00

ICS B01D003-14; B01D003-16; B01D003-24; B01D003-26; B01D059-04; B01J010-00; B21D000-00; F25J003-02; F28C003-06; F28F013-06; F28F025-00

AB EP 845293 A UPAB: 19981021

Device for exchanging heat and / or material made of a stack of fixed ventilators (1A, 1B) to encourage gas mixing. Each ventilator has four **deflectors** (1C) whose average normals are inclined and deduced from each other by rotating about their vertical axes. The sum of the four angles of rotation is 360 deg. and the ventilators are stacked in successive horizontal layers in the middle of which each **deflector** forms part of two adjacent ventilators turning in opposite directions and so there is sufficient **space** between two adjacent **deflectors** for the gas to flow. Process for making a **device** as described above in which metal or other sheets are cut and folded and / or sintered, pierced or stamped to form pleated sheets, with or without projections, with the full surfaces forming the flat, folded, curved or pierced **deflectors.** Installation for the separation of gas from air or hydrocarbons or **carbon** dioxide or isotopes in a distillation column which includes at least one **device** as described above.

ADVANTAGE - Fabrication of this **device** is exceptionally straightforward.

Dwg.1/12

FS CPI GMPI

FA AB; GI; DCN

MC CPI: E10-J02D; E11-Q01; E31-N05B; H02-A; J08-C; K08-X

L65 ANSWER 42 OF 63 CAPLUS COPYRIGHT 2004 ACS on STN

AN 1998:724637 CAPLUS

DN 130:26635

ED Entered STN: 17 Nov 1998

TI Heat transfer in porous media

AU Fort, C.; Goyheneche, J.-M.; Duffa, G.

CS CEA-Centre d'etudes Scientifiques et Techniques d'Aquitaine, Fr.

SO CHOCS (1998), 19, 25-34

CODEN: CHCSE5; ISSN: 1157-741X

PB Commissariat a l'Energie Atomique, Centre d'Etudes de Limeil-Valenton
DT Journal
LA French
CC 48-5 (Unit Operations and Processes)
AB Thermal insulation and weight constraints in **space**, and especially for re-entry vehicles, require the use of specific materials such as porous media. Theor. and exptl. studies on porous media lead to a simple expression of the thermal properties adapted to the thermal and thermomech. assessment of complex three-dimensional structures. The materials studied are carbon foams or felts, with volumetric mass of about 200 kg/m3, which are able to withstand high temps. (3000 K). Theor. approaches, based on stochastic and deterministic methods in association with specific exptl. **devices**, allow us to analyze the connection between radiative and conductive transfer and to implement predictive models for the variation of radiative conductivity in porous insulating media. These tools significantly contribute to the design of materials.
ST heat transfer porous media reentry vehicle; **space** vehicle heat transfer thermal insulation
IT Felts
Foams
(carbon; heat transfer in porous media of reentry vehicles)
IT **Radiative heat** transfer
(conductive; **heat** transfer in porous media of reentry vehicles)
IT Conductive heat transfer
Microstructure
Porosity
Porous materials
Radiative heat transfer
Simulation and Modeling, physicochemical
Space vehicles
Thermal conductivity
Thermal insulators
(**heat** transfer in porous media of reentry vehicles)
IT Conductive **heat** transfer
(**radiative**; **heat** transfer in porous media of reentry vehicles)
IT Simulation and Modeling, physicochemical
(stochastic; heat transfer in porous media of reentry vehicles)
IT **7440-44-0**, Carbon, uses
RL: TEM (Technical or engineered material use); USES (Uses)
(foams/felts; heat transfer in porous media of reentry vehicles)
RE.CNT 12 THERE ARE 12 CITED REFERENCES AVAILABLE FOR THIS RECORD
RE
(1) Bird, G; Molecular gas dynamics 1976
(2) Bourret, F; Revue Generale de Thermique 1997, V36, P510 CAPLUS
(3) Bourret, F; These Universite de Bourgogne 1995
(4) Deissler, R; Journal of Heat Transfer 1964, P240
(5) Epherre, J; Chocs
(6) Goyheneche, J; These no 97ISAL0043 INSA de Lyon 1997
(7) Guilpart, B; Chocs
(8) Hottel, H; Radiative transfer 1967

(9) Nicolau, V; These no 94ISAL0001 INSA de Lyon 1994
(10) Noble, J; International Journal of Heat and Mass Transfer 1975, V18, P261
(11) Rosseland, S; Theoretical astrophysics 1936
(12) Tong, T; Journal of Thermal Insulation 1980, V4, P27

L65 ANSWER 43 OF 63 CAPLUS COPYRIGHT 2004 ACS on STN
AN 1998:17886 CAPLUS
DN 128:173022
ED Entered STN: 14 Jan 1998
TI Probability distributions of high-energy solar-heavy-ion fluxes from
IMP-8: 1973-1996
AU Tylka, Allan J.; Dietrich, William F.; Boberg, Paul R.
CS E.O. Hulburt Center for Space Research, Naval Research Laboratory, Washington, DC, 20375-5352, USA
SO IEEE Transactions on Nuclear Science (1997), 44(6, Pt. 1), 2140-2149
CODEN: IETNAE; ISSN: 0018-9499
PB Institute of Electrical and Electronics Engineers
DT Journal
LA English
CC 70-7 (Nuclear Phenomena)
AB We present probability distributions for the fluxes and event-integrated fluences of solar He, CNO, and Fe ions at high energies relevant to **space**-system design, based on observations from the University of Chicago's Cosmic Ray Telescope on IMP-8 in 1973-96. We compare the observed distributions to CREME96, whose new solar models are shown to produce realistic, extreme-worst-case (.apprx.99+% confidence level) environments. The probability distributions show that a modest reduction, in the reliability requirement (from .apprx.99% to .apprx.90-95% confidence level, for example) can significantly reduce the severity of the heavy-ion hazard. This reduction factor is larger for solar heavy ions than for solar protons, and the, exact amount of the reduction will depend critically upon other factors, such as **device** sensitivity, shielding, and orbit. We also show predictions of mission-accumulated solar-heavy-ion fluences as functions of confidence level and mission duration.
ST dosimetry mission accumulated solar heavy ion; **space** travel dosimetry mission accumulated
IT Solar **radiation**
Solar **radiation**
(cosmic; probability distributions of high-**energy** solar-heavy-ion fluxes from IMP-8)
IT Dosimetry
Space travel
(mission-accumulated solar-heavy-ion fluences)
IT Cosmic ray nuclei
(probability distributions of high-energy solar-heavy-ion fluxes from IMP-8)
IT Cosmic ray
Cosmic ray
(solar; probability distributions of high-energy solar-heavy-ion fluxes from IMP-8)
IT 7439-89-6D, Iron, ions, occurrence **7440-44-0D**, Carbon, ions, occurrence 7440-59-7D, Helium, ions, occurrence 7727-37-9D, Nitrogen,

ions, occurrence   7782-44-7D, Oxygen, ions, occurrence
RL: GOC (Geological or astronomical occurrence); OCCU (Occurrence)
(probability distributions of high-energy solar-heavy-ion fluxes from IMP-8)
RE.CNT 18   THERE ARE 18 CITED REFERENCES AVAILABLE FOR THIS RECORD
RE
(1) Boberg, P; Astrophys J Letters 1996, V471, PL65 CAPLUS
(2) Chenette, D; IEEE Trans Nucl Sci 1984, V31, P1217
(3) Croley, D; IEEE Trans Nucl Sci 1995, V42, P1489
(4) Dan, W; "GOES Space Environment Monitor CD-ROM, 1-Minute and 5-Minute Averages 1994
(5) Feynman, J; J Geophys Res 1993, V98, P13281
(6) Feynman, J; J Spacecr Rockets 1990, V27, P403
(7) Garcia-Munoz, M; Astrophys J Letters 1975, V201, PL145 CAPLUS
(8) Leske, R; Astrophys J Letters 1995, V452, PL149 CAPLUS
(9) Majewski, P; IEEE Trans Nucl Sci 1995, V42, P2043 CAPLUS
(10) National Space Science Data Center; http://nssdc.gsfc.nasa.gov/omniweb
(11) Reames, D; Adv Space Res 1995, V15(7), P41 CAPLUS
(12) Shea, M; Proc 23rd Internat Cosmic Ray Conf (Calgary) 1993, V3, P846
(13) Simnett, G; Space Science Reviews 1976, V19, P579
(14) Summers, G; IEEE Trans Nucl Sci 1987, V34, P1134
(15) Tylka, A; Astrophys J Letters 1995, V444, PL109 CAPLUS
(16) Tylka, A; IEEE Trans Nucl Sci 1996, V43, P2758 CAPLUS
(17) Tylka, A; Proc the 25th Internat Cosmic Ray Conference (Durban, South Africa) 1997, V1, P101
(18) Tylka, A; Submitted to IEEE Trans Nucl Sci, These proceedings, http://crsp3.nrl.navy.mil/creme96/

L65 ANSWER 44 OF 63 WPIX COPYRIGHT 2004 THOMSON DERWENT on STN
AN 1996-105884 [11] WPIX
DNN N1996-088677   DNC C1996-033543
TI Non-azeotropic refrigerant compsn. - containing **carbon** di oxide, fluoromethane, hydrofluorocarbon(s) or ether(s), and hydrocarbon(s).
DC E16 E36 G04 J07 X27
IN CORR, S; MORRISON, J D; MURPHY, F T; POWELL, R L
PA (ICIL) IMPERIAL CHEM IND PLC
CYC 23

PI	WO 9602604	A1	19960201	(199611)*	EN	19	C09K005-04
	RW: AT BE CH DE DK ES FR GB GR IE IT LU MC NL PT SE						
	W: AU BR CA JP KR US						
	AU 9528049	A	19960216	(199622)			C09K005-04
	EP 770112	A1	19970502	(199722)	EN		C09K005-04
	R: AT BE CH DE DK ES FR GB GR IE IT LI LU MC NL PT SE						
	BR 9508272	A	19971125	(199803)			C09K005-04
	JP 10502697	W	19980310	(199820)		19	C09K005-04
	AU 693226	B	19980625	(199836)			C09K005-04
	KR 97704851	A	19970906	(199839)			C09K005-04
	EP 770112	B1	19990421	(199920)	EN		C09K005-04
	R: AT BE CH DE DK ES FR GB GR IE IT LI LU MC NL PT SE						
	DE 69509238	E	19990527	(199927)			C09K005-04
	ES 2131319	T3	19990716	(199935)			C09K005-04

ADT WO 9602604 A1 WO 1995-GB1593 19950706; AU 9528049 A AU 1995-28049

19950706; EP 770112 A1 EP 1995-923510 19950706, WO 1995-GB1593 19950706; BR 9508272 A BR 1995-8272 19950706, WO 1995-GB1593 19950706; JP 10502697 W WO 1995-GB1593 19950706, JP 1996-504781 19950706; AU 693226 B AU 1995-28049 19950706; KR 97704851 A WO 1995-GB1593 19950706, KR 1997-700163 19970111; EP 770112 B1 EP 1995-923510 19950706, WO 1995-GB1593 19950706; DE 69509238 E DE 1995-609238 19950706, EP 1995-923510 19950706, WO 1995-GB1593 19950706; ES 2131319 T3 EP 1995-923510 19950706

FDT AU 9528049 A Based on WO 9602604; EP 770112 A1 Based on WO 9602604; BR 9508272 A Based on WO 9602604; JP 10502697 W Based on WO 9602604; AU 693226 B Previous Publ. AU 9528049, Based on WO 9602604; KR 97704851 A Based on WO 9602604; EP 770112 B1 Based on WO 9602604; DE 69509238 E Based on EP 770112, Based on WO 9602604; ES 2131319 T3 Based on EP 770112

PRAI GB 1994-14110 19940713

REP DE 4116274; EP 299614; US 5340490; WO 9314174; WO 9417153

IC ICM C09K005-04

AB WO 9602604 A UPAB: 19960315

A non-azectropic refrigerant compsn. contains: (A) **carbon** dioxide and/or fluoromethane; (B) at least one cpd. from hydrofluorocarbons and hydrofluorocarbon ethers; and (C) at least one hydrocarbon. The b.pt. of (B) being at least 150deg. C higher than the sublimation temperature of CO2 and/or the b.pt. of fluoromethane in (A). Also claimed is a cooling method involving condensing the compsn. then evaporating in heat exchange relationship with a fluid to be cooled.

USE - Provides desired cooling in heat **transfer devices** such as air conditioning and low temperature refrigeration systems.

ADVANTAGE - The compsn. contains cpds. which have low or zero ozone depletion potentials. The mixture boils over a wide temperature range which can be used to increase the energy efficiency of the system in which it is used. This increase in energy efficiency leads to a reduction in **global warming** properties.

Dwg.0/0

FS CPI EPI

FA AB; DCN

MC CPI: E10-H01C; E10-H04A3; E10-J02D2; E31-N05C; G04-B01; J07-A08
EPI: X27-F

L65 ANSWER 45 OF 63 CAPLUS COPYRIGHT 2004 ACS on STN

AN 1996:736148 CAPLUS

DN 126:67385

ED Entered STN: 14 Dec 1996

TI Measurement of the transmission of the UV/Ion shields for the AXAF high resolution camera

AU Meehan, G. R.; Kenter, A. T.; Kraft, R. P.; Murray, S. S.; Zombeck, M. V.; Kobayashi, K.; Chappell, J. H.; Barbera, M.; Collura, A.

CS Center Astrophysics, Cambridge, MA, 02138, USA

SO Proceedings of SPIE-The International Society for Optical Engineering (1996), 2808(EUV, X-Ray, and Gamma-Ray Instrumentation for Astonomy VII), 210-228
CODEN: PSISDG; ISSN: 0277-786X

PB SPIE-The International Society for Optical Engineering

DT Journal
LA English
CC 74-13 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)
Section cross-reference(s): 73

AB The Advanced x-ray Astrophysics Facility (AXAF) is scheduled for launch in summer/fall 1998. One of its 2 focal plane instruments is the High Resolution Camera (HRC). The HRC consists of 2 detectors; an imaging detector (HRC-I) and a detector (HRC-S) for the spectroscopic read-out of the Low **Energy Transmission** Grating (LETG). Both detectors are comprised of a chevron pair of microchannel plates with a crossed grid charge detector (CGCD) and a UV/ion shield (UVIS). Each UVIS is mounted as a free standing window in front of the MCPs. The HRC-I UVIS is 10 cm + 10 cm and consists of 5000 Å polyimide, 1 side of which is coated with 700 Å Al. The other side is coated with 200 Å of C. The HRC-S UVIS consists of three 3 cm + 10 cm segments. The thickness of the polyimide film (2000-2500 Å) and of the Al coating (300-2000 Å) of each segment was varied to optimize the shield's performance with the LETG. X-ray transmission models will be presented. Results of laboratory x-ray transmission measurements of the flight HRC-I UVIS at various energies at 0.1-1.5 keV, as well as results of x-ray transmission measurements of a flight UVIS-I witness sample, is discussed. Results of UV transmission measurements of a flight UVIS-I witness sample will also be presented.

ST shield UV ion camera x ray; polyimide shield UV ion camera x; aluminum shield UV ion camera x; filter UV x ray camera; **spacecraft** x camera shield UV ion; carbon shield UV ion camera x

IT Optical filters
(UV; measurement of transmission of UV/Ion shields for AXAF high resolution camera)

IT Optical transmission
Space vehicles
UV shields
X-ray
(measurement of transmission of UV/Ion shields for AXAF high resolution camera)

IT Polyimides, properties
RL: **DEV (Device component use)**; PRP (Properties); USES (Uses)
(measurement of transmission of UV/Ion shields for AXAF high resolution camera)

IT Ions
(shields; measurement of transmission of UV/Ion shields for AXAF high resolution camera)

IT Cameras
(x-ray; measurement of transmission of UV/Ion shields for AXAF high resolution camera)

IT **7440-44-0**, Carbon, uses
RL: **DEV (Device component use)**; USES (Uses)
(measurement of transmission of UV/Ion shields for AXAF high resolution camera)

IT 7429-90-5, Aluminum, properties
RL: **DEV (Device component use)**; PRP (Properties); USES (Uses)

(measurement of transmission of UV/Ion shields for AXAF high resolution camera)

L65 ANSWER 46 OF 63 CAPLUS COPYRIGHT 2004 ACS on STN
AN 1996:535422 CAPLUS
DN 125:260647
ED Entered STN: 07 Sep 1996
TI Soft x-ray calibration of the Co/C multilayer mirrors for the Objective Crystal Spectrometer on the Spectrum Roentgen-Gamma satellite
AU Abdali, S.; Tarrio, C.; Christensen, F. E.; Schnopper, H. W.
CS Danish Space Research Institute, Copenhagen, 2100, Den.
SO Proceedings of SPIE-The International Society for Optical Engineering (1996), 2805(Multilayer and Grazing Incidence X-Ray/EUV Optics III), 66-73 CODEN: PSISDG; ISSN: 0277-786X
PB SPIE-The International Society for Optical Engineering
DT Journal
LA English
CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)
AB The Objective Crystal Spectrometer (OXS) on the forthcoming Spectrum-Roentgen-Gamma satellite is designed to carry 3 kinds of crystals: LiF(220), Si(111) and RAP(001), placed in front of the SODART telescope. The 36 super-polished (root-mean-square roughness < 0.1 nm) Si(111) substrates were coated with 65-80 periods of Co/C multilayers using electron beam evaporation deposition combined with ion polishing for the metal layers. These crystals are to be used in the energy band immediately below the C-K absorption edge of 0.284 keV. Because the crystals are to be assembled as 1 crystal on the OXS, the **reflectivity** performance as a function of **energy** and angle of incidence of all crystals was measured using line radiation from an x-ray tube which provides 1.487 and 0.277 keV and using synchrotron radiation at 0.16-0.28 keV at the Synchrotron UV Radiation electron storage ring at the Natl. Inst. of Stds. and Technol. The results from these measurements are discussed.
ST calibration cobalt carbon mirror Roentgen satellite
IT Spectrometers
(Objective Crystal; soft x-ray calibration of cobalt/carbon multilayer mirrors on Spectrum Roentgen-Gamma satellite for)
IT **Space** vehicles
(Spectrum Roentgen-Gamma; soft x-ray calibration of cobalt/carbon multilayer mirrors for Objective Crystal Spectrometer on)
IT Synchrotron radiation
(soft x-ray calibration of cobalt/carbon multilayer mirrors for Objective Crystal Spectrometer on Spectrum Roentgen-Gamma satellite)
IT Calibration
(soft x-ray; of cobalt/carbon multilayer mirrors for Objective Crystal Spectrometer on Spectrum Roentgen-Gamma satellite)
IT Mirrors
(multilayer, cobalt/carbon; soft x-ray calibration of multilayer mirrors for Objective Crystal Spectrometer on Spectrum Roentgen-Gamma satellite)
IT X-ray **devices**

(sources, soft; calibration of cobalt/carbon multilayer mirrors for
Objective Crystal Spectrometer on Spectrum Roentgen-Gamma satellite)
IT 7440-21-3, Silicon, uses 7789-24-4, Lithium fluoride (LiF), uses
33227-10-0, RAP
RL: **DEV (Device component use)**; USES (Uses)
(soft x-ray calibration of cobalt/carbon multilayer mirrors for
Objective Crystal Spectrometer on Spectrum Roentgen-Gamma satellite
using crystals of)
IT **7440-44-0**, Carbon, uses 7440-48-4, Cobalt, uses
RL: **DEV (Device component use)**; USES (Uses)
(soft x-ray calibration of multilayer mirrors for Objective Crystal
Spectrometer on Spectrum Roentgen-Gamma satellite containing)

L65 ANSWER 47 OF 63 WPIX COPYRIGHT 2004 THOMSON DERWENT on STN
AN 1995-178661 [23] WPIX
DNN N1995-140290 DNC C1995-082704
TI Blood oxygenation system and reservoir - includes new blood defoaming and
filtering chamber together with blood oxygenator and heat exchanger.
DC A96 D15 J02 L02 P34
IN LEONARD, R J; LINDSAY, E J; MAURER, D B; VIITALA, D W
PA (MINN) MINNESOTA MINING & MFG CO
CYC 20
PI WO 9511709 A2 19950504 (199523)* EN 76 A61M001-36
RW: AT BE CH DE DK ES FR GB GR IE IT LU MC NL PT SE
W: CA CN JP US
WO 9511709 A3 19950608 (199616) A61M001-36
US 5514335 A 19960507 (199624) 46 A61M001-14
EP 725657 A1 19960814 (199637) EN A61M001-36
R: BE DE FR GB IT NL SE
US 5580522 A 19961203 (199703) 45 A61M001-03
JP 09504205 W 19970428 (199727) 96 A61M001-36
CN 1133566 A 19961016 (199802) A61M001-36
US 5753173 A 19980519 (199827) B29C045-04
EP 725657 B1 20000209 (200012) EN A61M001-36
R: BE DE FR GB IT NL SE
DE 69422997 E 20000316 (200021) A61M001-36
ADT WO 9511709 A2 WO 1994-US11664 19941021; US 5514335 A US 1993-142809
19931025; EP 725657 A1 EP 1994-931845 19941021, WO 1994-US11664 19941021;
US 5580522 A Div ex US 1993-142809 19931025, US 1995-429359 19950426; JP
09504205 W WO 1994-US11664 19941021, JP 1995-512672 19941021; CN 1133566 A
CN 1994-193873 19941021; US 5753173 A Div ex US 1993-142809 19931025, Cont
of US 1995-429488 19950426, US 1996-725015 19961002; EP 725657 B1 EP
1994-931845 19941021, WO 1994-US11664 19941021; DE 69422997 E DE
1994-622997 19941021, EP 1994-931845 19941021, WO 1994-US11664 19941021
FDT EP 725657 A1 Based on WO 9511709; JP 09504205 W Based on WO 9511709; US
5753173 A Div ex US 5514335; EP 725657 B1 Based on WO 9511709; DE 69422997
E Based on EP 725657, Based on WO 9511709
PRAI US 1993-142809 19931025; US 1995-429359 19950426;
US 1995-429488 19950426; US 1996-725015 19961002
REP US 4227295; US 4846177; US 5039430; WO 9007943; WO 9204060
IC ICM A61M001-03; A61M001-14; A61M001-36; B29C045-04
ICS A61M001-16; A61M001-34; B01D063-02; B29C037-02; B32B031-70;

D21F001-60
AB WO 9511709 A UPAB: 19950619
A blood oxygenation system and reservoir includes a novel blood defoaming and filtering chamber together with a blood oxygenating and heat exchanging **device.** The blood oxygenating and heat exchanging **device** includes a housing, heat exchanging barrier and blood oxygenating medium. The oxygenating medium is composed of hollow fibres.
USE - For extracorporeal blood oxygenation.
ADVANTAGE - A novel integral cardiotomy-venous blood reservoir, blood oxygenator and heat exchanger **device.**
Dwg.2/40
FS CPI GMPI
FA AB; GI
MC CPI: A12-S05A; A12-V03B; D04-B10; J01-D02; J02-A02; L02-A03; L02-A04; L02-D04D

L65 ANSWER 48 OF 63 CAPLUS COPYRIGHT 2004 ACS on STN
AN 1995:684363 CAPLUS
DN 123:87012
ED Entered STN: 19 Jul 1995
TI Development of lightweight prototype carbon-carbon heat pipe with integral fins and metal foil liner
AU Juhasz, Albert J.; Rovang, Richard D.
CS NASA Lewis Research Center, Cleveland, OH, 44135, USA
SO AIP Conference Proceedings (1995), 324(Pt. 1), 135-43
CODEN: APCPCS; ISSN: 0094-243X
PB AIP Press
DT Journal
LA English
CC 48-5 (Unit Operations and Processes)
AB This report discusses development and proof-of-concept testing of a new lightweight carbon-carbon (C-C) **space radiator heat** pipe developed under the NASA Civil **Space** Technol. Initiative (CSTI) High Capacity Power Program. The heat pipe was filled with potassium working fluid and tested for 11 h, including startup from ambient temperature with the working fluid initially in the frozen state to near 700 K condenser temperature Steady-state heat pipe input power during testing was facility limited to about 300 W, representing about 50% of the design input power. Post test inspection showed the heat pipe to be in excellent condition after eight thermal cycles from ambient to steady-state operating temperature Potential applications, ranging from small **spacecraft** heat rejection to aircraft and terrestrial uses, are discussed.
ST carbon heat pipe lightweight prototype
IT Heat pipes
(development of lightweight prototype carbon-carbon heat pipe with integral fins and metal foil liner)
IT **7440-44-0**, Carbon, uses
RL: **DEV (Device component use)**; USES (Uses)
(development of lightweight prototype carbon-carbon heat pipe with integral fins and metal foil liner)

IT 7440-09-7, Potassium, uses
RL: NUU (Other use, unclassified); USES (Uses)
(working fluid; development of lightweight prototype carbon-carbon heat pipe with integral fins and metal foil liner)

L65 ANSWER 49 OF 63 WPIX COPYRIGHT 2004 THOMSON DERWENT on STN
AN 1994-059695 [08] WPIX
DNN N1994-046983 DNC C1994-026621
TI Combustion in heating furnace - involves mixing organic cpd. obtd. by reacting hydrogen and **carbon** di oxide with **carbon** -containing fuel.
DC E36 J03 J09 Q73
PA (YAWA) NIPPON STEEL CORP
CYC 1
PI JP 06011106 A 19940121 (199408)* 7 F23C009-00
ADT JP 06011106 A JP 1992-192965 19920625
PRAI JP 1992-192965 19920625
IC ICM F23C009-00
ICS B01J006-00; C07C001-12; C07C031-04; F23K005-10
AB JP 06011106 A UPAB: 19940407
Water is subjected to an electrolysis to obtain oxygen and hydrogen, the hydrogen reacted with CO2 enriched in waste gas to form an organic compound, and the organic compound burned with a **carbon** -containing fuel in order to heat an object. Oxygen is mixed with combustion air in burners for an oxygen-enriched combustion.
USE/ADVANTAGE - Used to heat slabs, billets. The amount of combustion gas is reduced, the concentration of CO2 is increased, the **transmission** of **heat** in objects to be heated is accelerated, the **heat** loss of **waste** gas is reduced, the unit cost of fuels in heating furnace is reduced, and the operation control of the **device** is simplified due to the integrated system for heating furnace, water electrolysis **device**, and organic compound synthesis **device.**
Dwg.0/2
FS CPI GMPI
FA AB; DCN
MC CPI: E31-A02; E31-A03; E31-D01; E31-D02; J03-B; J09-B

L65 ANSWER 50 OF 63 CAPLUS COPYRIGHT 2004 ACS on STN
AN 1995:186989 CAPLUS
DN 122:12793
ED Entered STN: 12 Nov 1994
TI Carbon-carbon heat pipe testing and evaluation
AU Rovang, Richard D.; Juhasz, Albert J.
CS Rocketdyne Division, Rockwell International, Canoga Park, CA, USA
SO Proceedings of the Intersociety Energy Conversion Engineering Conference (1994), 29TH(PT. 2), 706-10
CODEN: PIECDE; ISSN: 0146-955X
DT Journal
LA English
CC 48-5 (Unit Operations and Processes)
AB This report discusses development and proof-of-concept testing of a new

lightweight C-C **space radiator heat** pipe
developed under the NASA Civil **Space** Technol. Initiative (CSTI)
High Capacity Power Program. The heat pipe was filled with potassium
working fluid and tested for 11 h including start-up from ambient temperature
with the working fluid initially in the frozen state to near 700 K
condenser temperature Steady-state heat pipe input power during testing was
facility limited to about 300 W, representing about 50% of the design
input power. Post-test inspection showed the heat pipe to be in excellent
condition after eight thermal cycles from ambient to steady-state
operating temperature

ST carbon heat pipe testing evaluation

IT Heat pipes
(carbon-carbon heat pipe testing and evaluation)

IT **7440-44-0**, Carbon, uses
RL: **DEV (Device component use)**; USES (Uses)
(carbon-carbon heat pipe testing and evaluation)

IT 7440-09-7, Potassium, uses
RL: **DEV (Device component use)**; NUU (Other use, unclassified);
USES (Uses)
(carbon-carbon heat pipe testing and evaluation)

L65 ANSWER 51 OF 63 WPIX COPYRIGHT 2004 THOMSON DERWENT on STN

AN 1993-347001 [44] WPIX

DNN N1993-268048 DNC C1993-153559

TI Cooling **device** for heat treatment oven heated by external
infrared source - operates by passing specified cooling fluid through
space formed between two energy input port-holes in oven wall.

DC A25 A97 J09 L03 Q77 X25

IN DULAC, O; PENELON, J

PA (ETFR) FRANCE TELECOM

CYC 1

PI FR 2686967 A1 19930806 (199344)* 18 F27D009-00

ADT FR 2686967 A1 FR 1992-1210 19920204

PRAI FR 1992-1210 19920204

IC ICM F27D009-00
ICS F27B017-00

AB FR 2686967 A UPAB: 19931213
A **device** for cooling an oven used for heat treating an object is
claimed. The object (5) to be treated is mounted in the reaction chamber
(3) of the oven and irradiated with **radiation** from the
heat source (7) consisting of **reflector** (9) and infrared
lamps (11). Radiation from the lamps (11) passes into the reaction chamber
(3) through two parallel mounted portholes (13,14) made of a material
which is capable of **transmitting** the light radiation from the
lamps (11). The claimed cooling of the oven is accomplished by circulating
a cooling liquid (19), which comprises a heat-carrying liquid which is
transparent to radiation of between ca. 0.4 and 4 micrometres, through the
channel (17) formed between the portholes (13,14) to remove the energy
received by the portholes due to **radiation** from the
heated object (5).
Pref. the portholes (13,14) are made of quartz and the cooling liquid
(19) is transparent to radiation between ca. 0.4 and 2.5 micrometres. The

cooling liquid is chosen e.g. from cpds. with a **carbon** chain saturated
with halogens or cpds. with a **carbon** and oxygen chain saturated with
halogens, especially where the halogens are chosen from F and Cl. Claimed
coolng
liqs. are chosen from perfluoropolyethers of formula (I) in which n has an
average value of 19 and the ratio n/m = 1000, or low mol. weight polymers of
trifluoromonochloroethylene of formula Cl-(CF2-CFCl)n-Cl in which n is a
whole number 3-6.
USE/ADVANTAGE - The appts. is especially useful for heat treatment of
silicon chips for use in the production of microelectronic equipment. By
circulating a cooling liquid through the channel formed between the
portholes in the oven wall, the portholes are kept cool and thus do not
become an uncontrolled heat source, which could cause the formation of
opacifying deposits on the porthole or undesirable physico-chemical
reactions on the object to be treated.
Dwg.1/3

FS CPI EPI GMPI
FA AB; GI
MC CPI: A12-W11G; J09-B03; L04-D05
EPI: X25-B01H3; X25-C01

L65 ANSWER 52 OF 63 WPIX COPYRIGHT 2004 THOMSON DERWENT on STN
AN 1992-335298 [41] WPIX
DNN N1992-255792 DNC C1992-148999
TI **Carbon** di oxide liquefying **device** - includes sealed
vessel in which refrigerant is sealed, heat exchangers and LNG and
carbon di oxide inlets and outlets.
DC E36 J07 Q75
PA (MITO) MITSUBISHI HEAVY IND CO LTD
CYC 1
PI JP 04238804 A 19920826 (199241)* 4 C01B031-20
ADT JP 04238804 A JP 1990-417539 19901228
PRAI JP 1990-417539 19901228
IC ICM C01B031-20
ICS F25D003-10
AB JP 04238804 A UPAB: 19931115
Device includes a sealed vessel into which refrigerant is
sealable, a 1st heat exchanger arranged in the upper inner **space**
of the sealed vessel while inclined in the perpendicular **direction**
, and a 2nd **heat** exchanger arranged in the lower inner
space of the sealed vessel. LNG inlet and outlet are connected to
the 1st heat exchanger, and CO2 inlet and outlet are connected to the 2nd
heat exchanger. The sealed vessel has a refrigerant inlet and outlet.
ADVANTAGE - Heat **transfer** efficiency may be increased
Dwg.0/6
FS CPI GMPI
FA AB; DCN
MC CPI: E31-N05C; J07-D01

L65 ANSWER 53 OF 63 WPIX COPYRIGHT 2004 THOMSON DERWENT on STN
AN 1990-074949 [10] WPIX
CR 1988-272957 [39]; 1990-173242 [23]

DNN N1990-057480
TI Detector and localiser for low **energy radiation**
emissions - has pick-up crystal cushioned by shock absorbing layer and
sheathed by elastomeric retainer.
DC S03 S05
IN DENEN, D J; RAMSEY, R C; THURSTON, M O
PA (NEOP-N) NEOPROBE CORP
CYC 1
PI US 4893013 A 19900109 (199010)* 12
ADT US 4893013 A US 1988-248920 19880923
PRAI US 1987-27197 19870317; US 1988-248920 19880923
IC G01T001-16
AB US 4893013 A UPAB: 19940810
The detector employs a hand manipular probe containing a crystal, such as
cadmium telluride, which is secured in a light-tight environment. A
resilient compressible shock cushion layer is located at one face of the
crystal in conjunction with a biasing surface.
Additionally, an elastomeric retainer is positioned over the assembly
of crystal, cup, and shock cushion layer to form a sub-assembly for
retention within the **device.** A dead air **space** is
developed between the forward facing window of the probe and the crystal
remaining assemblage.
USE - In immuno-guided surgery capable for detecting very faint gamma
emissions and localising cancerous tumour.
4/6
Dwg.4/6
FS EPI
FA AB; GI
MC EPI: S03-G02; S05-D02X

AN 1990-313350 [42] WPIX
DNN N1990-240308
TI Cigarette substitute in shape of cigarette - has aerosol generation
device enclosed in combustion element.
DC P15
IN GERDING, G; HAUSER, B; MOLLER, K; MULLER, B H; RUDOLPH, G; WIETHAUP, W;
MOELLER, K; MUELLER, B H; MUELLER, B
PA (BRTA) BAT CIGARETTENFAB GMBH
CYC 2
PI DE 3910899 A 19901011 (199042)*
DE 3910899 C 19920617 (199225) 7 A24D001-18
US 5190060 A 19930302 (199311) 7 A24D001-18
ADT DE 3910899 A DE 1989-3910899 19890404; DE 3910899 C DE 1989-3910899
19890404; US 5190060 A US 1990-496840 19900321
PRAI DE 1989-3910899 19890404
IC ICM A24D001-18
ICS A24B015-16; A24F047-00
AB DE 3910899 A UPAB: 19930928
A cigarette substitute (10) has the external appearance of a normal
cigarette and consists of a combustion element (26), a heat
transfer device (24) which also serves to transport the

aerosol precursor, a duct in the aerosol generation zone (12), a mouthpiece (16) and an outer covering (14).

The heat **transfer** and aerosol precursor transport **device** (24) is . fitted in the centre of the aerosol generation zone (12) and is coaxially surrounded by the combustion element (26) and a layer (28) of thermal insulation.

USE - Cigarette substitute.

1/3

FS GMPI

FA AB; GI

L65 ANSWER 55 OF 63 WPIX COPYRIGHT 2004 THOMSON DERWENT on STN

AN 1989-243253 [34] WPIX

DNN N1989-185404

TI IR flexible guide mfr. e.g. for medical cutting tool - severing tube at spaced intervals along length without severing sleeve.

DC P81 S05 V07 X24

IN COLLES, M J; SMITH, G R; SMIGTH, G R

PA (UYHE-N) UNIV HERIOT-WATT; (UYHE-N) HERIOT-WATT UNIV

CYC 11

PI

EP 329353	A	19890823	(198934)*	EN	11	
R: CH DE ES FR GB IT LI NL SE						
US 4929052	A	19900529	(199025)			
CA 1307685	C	19920922	(199244)			G02B006-10
EP 329353	B1	19950426	(199521)	EN	11	G02B006-10
R: CH DE ES FR GB IT LI NL SE						
DE 68922325	E	19950601	(199527)			G02B006-10
ES 2075041	T3	19951001	(199545)			G02B006-10

ADT EP 329353 A EP 1989-301322 19890213; US 4929052 A US 1988-168897 19880316; CA 1307685 C CA 1989-591302 19890216; EP 329353 B1 EP 1989-301322 19890213; DE 68922325 E DE 1989-622325 19890213, EP 1989-301322 19890213; ES 2075041 T3 EP 1989-301322 19890213

FDT DE 68922325 E Based on EP 329353; ES 2075041 T3 Based on EP 329353

PRAI GB 1988-3620 19880217

REP 1.Jnl.Ref; A3...9120; EP 198603; GB 2199960; JP 58016205; No-SR.Pub; US 4068920; US 4148551; 01Jnl.Ref

IC ICM G02B006-10

ICS G02B006-44; G02B023-26

AB EP 329353 A UPAB: 19930923

A tube of material capable of guiding infra-red light is provided. The tube is enveloped in a flexible sleeve so that the sleeve fits tightly around the tube. The tube is then severed at spaced intervals along its length without severing the sleeve. A severed length of the tube is aligned at such an angle to an adjacent length as to allow passage of a beam of infra-red light from one to the other.

The infra-red waveguide is of a length considerably greater than its transverse dimensions with high efficiency of infra-red **transmission**, especially at a wavelength of about 10.6 micrometers and continuous power levels in excess of 10 watts. The infra-red waveguide can be provided with a flexible sheath which permits the waveguide to be bent and which pref. incorporates a bend limiter to limit localised curvature of the waveguide at any point along its length to extent which

prevents damage due to excessive bending.
USE - For guiding IR energy produced by **carbon** dioxide laser, e.g. in medicine, as cutting instrument in place of scalpel.
5/7

FS EPI GMPI
FA AB
MC EPI: S05-B; V07-F01A; V07-F01B4; X24-D03

L65 ANSWER 56 OF 63 WPIX COPYRIGHT 2004 THOMSON DERWENT on STN
AN 1989-130849 [18] WPIX
DNN N1989-099622
TI Surface temperature measurer for rotating roller - uses belt or drum **heated** by conduction and **radiating** to pyrometer.
DC S03
PA (KUST) KUESTERS MASCHFAB FA EDUARD
CYC 5

PI	DE 3734018	A	19890427	(198918)*	8
	GB 2210975	A	19890621	(198925)	
	FI 8804567	A	19890409	(198927)	
	JP 01237421	A	19890921	(198944)	
	US 4877331	A	19891031	(199002)	7
	DE 3734018	C	19910110	(199102)	
	GB 2210975	B	19910911	(199137)	

ADT DE 3734018 A DE 1987-3734018 19871008; GB 2210975 A GB 1988-23603 19881007; JP 01237421 A JP 1988-253649 19881007; US 4877331 A US 1988-257350 19881013
PRAI DE 1987-3734018 19871008
IC G01J005-02; G01K001-16; G01K013-08
AB DE 3734018 A UPAB: 19930923
The roller (10) of a process drives a thin, flat endless belt (20) over an arc of contact (21), with another roller (19) maintaining belt tension as it passes round guide rollers (12,13,14,15). The belt is of reinforced fabric, PTFE or **carbon** fibre, black on its inside face so as to have an emission factor at least 50%, and by conduction takes up the same temperature as the roller surface then **radiates thermal energy** to a **radiation** prometer (30). The belt (20) runs in a narrow channel (23,23', 24,24') with **reflective** inner surfaces (28) so, when enclosed under the lid of a housing (5), has min. **heat loss**; and the belt temperature then closely tracks that of the roller surface.
Two guide rollers, one tension roller and a right angled pyrometer probe are used in a **space**-saving version. Another version replaces the belt by a drum with its surfaces enclosed within restricted air **spaces** to minimise **heat loss.** The inner surface is black and **radiates thermal energy** as for a belt.
USE/ADVANTAGE - process monitoring in textiles, papermaking etc. Measurement is independent of radiation properties of roller; no rubbing contact is made with it.
1/6

FS EPI
FA AB; GI

MC EPI: S03-A03; S03-B01E

L65 ANSWER 57 OF 63 WPIX COPYRIGHT 2004 THOMSON DERWENT on STN
AN 1987-164221 [24] WPIX
DNN N1987-123105 DNC C1987-068288
TI Thermal electric generator with nuclear heat source - has core of ceramic material surrounded by **carbon** FRP cylindrical shield with thermo electric elements and insulating plates.
DC K05 K06 X14
PA (ALLM) ASEA BROWN BOVERI A; (BROV) BBC BROWN BOVERI & CIE AG; (SCHU-I) SCHULTEN R
CYC 6
PI DE 3542839 A 19870611 (198724)* 4
WO 8703733 A 19870618 (198725) GE
RW: BE FR GB IT
W: US
EP 250496 A 19880107 (198801) GE
R: BE FR GB IT
DE 3542839 C 19890309 (198910)
US 4830817 A 19890516 (198923) 8
ADT DE 3542839 A DE 1985-3542839 19851204; WO 8703733 A WO 1986-DE496 19861204; EP 250496 A EP 1986-900046 19861204; US 4830817 A US 1987-113282 19870804
PRAI DE 1985-3542839 19851204
REP 1.Jnl.Ref; DE 1804859; US 3989546
IC G12C003-26; G12C005-06; G12C007-04; G12C011-06; G21C001-14; G21C003-04; G21C011-06; G21D007-04
AB DE 3542839 A UPAB: 19930922
Thermoelectric generator comprising cylindrical thermal HTR (1) having a core consisting of ceramic material enveloped by **carbon**-fibre reinforced graphite cylindrical support shield (2) fitted with thermoelectric elements (3). HTR is provided with top- and bottom thermal insulating plates (4,5). Heat **transfer** from HTR (1) to shield (2) and **heat-loss** of the latter occurs by radial **heat radiation.** The HTR core consists of **carbon** -fibre reinforced graphite rod-shaped fuel elements (10) with embedded zirconium carbide coated fuel particles. Part of fuel element (10) surfaces are coated (13) with silicon carbide. The active core-zone (19) has an annular cross-section. Interspace (20) contained by core-zone (19) is fitted with **reflector** elements (21) of similar shape as fuel elements (10). Combustible neutron poisons are present in individual fuel (10)- and **reflector** (21) elements. Shield (2) is formed by square grid-shaped structure for mounting of thermoelectric elements (3), which electrically insulated from structure by ceramic components (26) pref. consisting of magnesium-or aluminium oxide. Rod-shaped fuel elements (10) have circular cross-section whilst top- and base sections (12) have hexagonal cross-section. Each fuel element (10) is provided with centre axial bore (14) fitted with support rod (16) pref. consisting of **carbon** fibre reinforced graphite, whilst screws (17) of a similar material connect fuel element (10) to support rod (16). Several spaced fuel elements are fitted to support rod (16). The fuel concentration in fuel elements is such, that an almost even core output is achieved in axial-

and radial direction. The output-distribution does not deviate from the mean value by more than approx. +/- 30%. Plates (4,5) consist of a **carbon** fibre reinforced graphite support material as well as magnesium-oxide. The HTR is provided with 2 control-shutdown arrangements (7) , comprising absorber rods (8) which can be moved into openings (15) of fuel element (1).

FS CPI EPI
FA AB
MC CPI: K05-A; K05-B02; K05-B06A; K06-X
EPI: X14-A02

L65 ANSWER 58 OF 63 CAPLUS COPYRIGHT 2004 ACS on STN
AN 1987:129802 CAPLUS
DN 106:129802
ED Entered STN: 17 Apr 1987
TI Susceptor for chemical vapor deposition
IN Goto, Taisan
PA Toshiba Machine Co., Ltd., Japan
SO Jpn. Kokai Tokkyo Koho, 3 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
IC ICM C30B025-12
ICA H01L021-205
CC 75-2 (Crystallography and Liquid Crystals)
Section cross-reference(s): 57
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 61275193	A2	19861205	JP 1985-116148	19850529
	JP 04056799	B4	19920909		
PRAI	JP 1985-116148		19850529		

AB A susceptor for chemical vapor deposition consists of 2 C plates and an IR-transmitting thermal insulating **space** between the C plates. The insulating **space** may be an open **space** or a quartz plate. The C plates are partly or entirely in contact with each other on the outer and/or the inner periphery of the plates with a support (e.g., thermal insulator). Thus, quartz pins were inserted between the C plates, and the upper C plate was uniformly **heated** by IR **radiation** from the lower C plate, which was heated by high-frequency power, for uniform film deposition. The thermal cycle time was shortened from that of a conventional susceptor.

ST carbon plate susceptor chem vapor deposition; quartz support susceptor
IT Thermal insulators
(IR-transmitting, carbon plate susceptor with, for chemical vapor deposition)
IT Films
(chemical vapor deposition of, carbon plate susceptor for)
IT **7440-44-0**, Carbon, uses and miscellaneous
RL: USES (Uses)
(susceptor from, for chemical vapor deposition)
IT 14808-60-7, Quartz, uses and miscellaneous

RL: **DEV (Device component use)**; USES (Uses)
(thermal insulator from, in carbon plate susceptor for chemical vapor deposition)

L65 ANSWER 59 OF 63 WPIX COPYRIGHT 2004 THOMSON DERWENT on STN
AN 1985-142389 [24] WPIX
DNN N1985-107340
TI Liquid cooling arrangement for high frequency solid state **device** - boils and condenses coolant so as to prevent amplitude modulation of signals in **device** due to boiling.
DC U11
IN KANEKO, Y F D; OKUBO, N R M; SAITO, T; TOKUMITSU, Y
PA (FUIT) FUJITSU LTD
CYC 8
PI

EP 144071	A	19850612	(198524)*	EN	32
R: DE FR GB IT NL					
JP 60116155	A	19850622	(198531)		
JP 60117646	A	19850625	(198531)		
JP 60117647	A	19850625	(198531)		
JP 60133743	A	19850716	(198534)		
JP 60138946	A	19850723	(198535)		
JP 60142550	A	19850727	(198536)		
JP 60148155	A	19850805	(198537)		
JP 60148156	A	19850805	(198537)		
CA 1230184	A	19871208	(198803)		
US 4796155	A	19890103	(198904)		
EP 144071	B	19900613	(199024)		
R: DE FR GB IT NL					
DE 3482527	G	19900719	(199030)		

ADT EP 144071 A EP 1984-114439 19841129; JP 60116155 A JP 1983-223103 19831129; JP 60117646 A JP 1983-224304 19831130; JP 60117647 A JP 1983-224307 19831130; JP 60133743 A JP 1983-240826 19831222; JP 60138946 A JP 1983-244537 19831227; JP 60142550 A JP 1983-247693 19831229; JP 60148155 A JP 1984-3555 19840113; JP 60148156 A JP 1984-3556 19840113; US 4796155 A US 1987-88520 19870820
PRAI JP 1983-223103 19831129; JP 1983-224304 19831130;
JP 1983-224307 19831130; JP 1983-240826 19831222;
JP 1983-244537 19831227; JP 1983-247693 19831229;
JP 1984-3555 19840113; JP 1984-3556 19840113;
JP 1983-244577 19831227
REP A3...8539; FR 1266244; FR 2413847; FR 2500959; No-SR.Pub
IC H01L023-42
AB EP 144071 A UPAB: 19930925
A liquid coolant (2) such as difluorodichloromethane or **carbon** tetrafluoride is provided in a vessel (1) at the top of which there is a **space** (49) for the vapour state. Cooling fins (4) on the upper outer surface of the vessel remove heat. The high-frequency **device** e.g. an amplifier (24) is connected through a coaxial connector (12) to a cable (13). A field effect transistor (8) of the **device** is matched by a circuit (6) to the cable impedance.

Heat dissipated by the FET is **transferred** through a metal mount (15) to the coolant which is heated to boiling. As a result, bubbles

of vapour are produced which are cooled in the upper **space** (49) and condensed.

ADVANTAGE - FET chip is arranged in recess of carrier (7). Consequently it is not exposed to vapour bubbles so that amplitude modulation effects are avoided. In addition, destructive action of formation of vapour bubbles is avoided.

1/34

FS EPI

FA AB

MC EPI: U11-D02

L65 ANSWER 60 OF 63 WPIX COPYRIGHT 2004 THOMSON DERWENT on STN

AN 1985-105979 [18] WPIX

DNN N1985-079407

TI Fuel burning heater e.g. for vehicle - has combustion contained in small volume pinched neck cylinder located within inner expansion chamber.

DC Q12 Q14 Q74

IN LUCIUS, W

PA (WBAI) WEBASTO WERK BAIER KG W

CYC 2

PI DE 3337601 A 19850425 (198518)* 15
US 4640262 A 19870203 (198707)
DE 3337601 C 19880616 (198824)

ADT DE 3337601 A DE 1983-3337601 19831015; US 4640262 A US 1984-643305 19840822

PRAI DE 1983-3337601 19831015

IC B60H001-22; B60M001-22; F24C005-18; F24H001-12; F24H003-02; F24H009-18

AB DE 3337601 A UPAB: 19930925

In the heater, the fuel/air mixture is expelled from the burner nozzle (2), and initial ignition is achieved by a sparking electrode (4). The combustion of the mixture is concentrated within a metal chamber (11) of equal diameter and length, the top of which is slightly constricted (15) to contain the process.

The heated air expands into the upper area of an inner chamber (5) and then passes down a channel defined by a central chamber (7) and the inner chamber wall (5) to the atmosphere (6). An outer water filled jacket (8) is warmed by the heated air, the water being passed onto the vehicle heat exchanger (9,10).

ADVANTAGE - Creates favourable conditions for combustion reducing exhaust gas emission and **soot** formation and reduces noise.

1/1

FS GMPI

FA AB

L65 ANSWER 61 OF 63 WPIX COPYRIGHT 2004 THOMSON DERWENT on STN

AN 1983-17773K [08] WPIX

DNN N1983-032908 DNC C1983-017329

TI Fuel cell power plant - in which heat generated in the cells is used to vaporise water in gases generated by the cells.

DC E36 L03 X16

IN MIKAWA, H

PA (HITA) HITACHI LTD

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CYC  5
PI   EP 71967        A  19830216 (198308)* EN   14
         R: DE GB NL
     JP 58023169     A  19830210 (198312)
     US 4464444      A  19840807 (198434)
     EP 71967        B  19860730 (198631)  EN
         R: DE GB NL
     DE 3272300      G  19860904 (198637)
ADT  EP 71967 A EP 1982-107013 19820803; US 4464444 A US 1982-403011 19820729
PRAI JP 1981-120786       19810803
REP  GB 1461366; GB 1537082; No-SR.Pub; US 4041210
IC   H01M008-04
AB   EP     71967 A UPAB: 19930925
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Power plant has fuel cells (10) with a **device** (20,21) which supplies air to the cathodes (12) of the cells and a **device** (40) which produces hydrogen by reaction of a fuel with steam and supplies the hydrogen to the anodes (14) of the cells, combustion energy of an unreacted gas of the cells (10) being afforded to the hydrogen producing **device** (40) and the air supplying **device** (20, 21).

The water content of the gases emitted from the cathodes and anodes of the cells is condensed and revapourised by an first arrangement (60, 61, 103) and the resulting steam is supplied to the hydrogen producing **device** (40), while a second arrangement (50, 110) temporarily accumulates heat generated by the fuel cells and supplies it to a **device** (30) in order to vapourise the water in the first arrangement (60, 61, 103).

Used in a fuel cell power generation system. Temperature of fuel cells can be held constant irrespective of the load of the cells, therefore the required power can be immediately generated on a load demand and the cell performance can be held constant and the lifetime can be prolonged owing to reduced thermal shocks. Since the waste energy can be recovered the power generation efficiency is improved.

1/2

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FS   CPI EPI
FA   AB
MC   CPI: E31-A; L03-E04
     EPI: X16-C

L65  ANSWER 62 OF 63  CAPLUS  COPYRIGHT 2004 ACS on STN
AN   1976:97730  CAPLUS
DN   84:97730
ED   Entered STN:  12 May 1984
TI   System for protection from laser radiation
IN   Poulsen, Peter D.
PA   General Dynamics Corp., USA
SO   U. S. Publ. Pat. Appl. B, 6 pp. Division of U.S. 3,871,739.
     CODEN: USXXDP
DT   Patent
LA   English
IC   H01S
NCL  331094500T
CC   73-6 (Spectra by Absorption, Emission, Reflection, or Magnetic Resonance,
```

and Other Optical Properties)
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	US 527669	A1	19760113	US 1974-527669	19741127
	US 3982206	A	19760921		
	US 3871739	A	19750318	US 1972-280312	19720814
PRAI	US 1972-280312		19720814		

AB A protective window is fabricated for use in protecting personnel and equipment from damage from high-energy lasers while permitting continued operation of the overall system. The protective window has a dichroic coating which primarily reflects incident ir radn. while transmitting incident visible light and which has a further overcoating on at least 1 window surface of a material which rapidly vaporizes cleanly away without residue when subjected to intense ir radn. This vaporization carries away any contamination, such as dirt or dust, on the resin coating, leaving a very clean reflection surface. In order to further protect the window, channels may be formed within the window through which a cooling fluid may be circulated to carry away any heat absorbed by the window when subjected to ir irradiation Thus, a silica glass sheet was coated with layers of Ni and Au with thicknesses of ≈100 and ≈200 Å, resp. The Au layer was then overcoated by vacuum evaporation with a 0.001-in. layer of FEP-Teflon 856-200. The coated glass sheet was then mounted in a frame with the uncoated surface **spaced** ≈0.5 in. from a similar coated glass sheet. The inter-sheet **space** was sealed around the edges of assembly and fluid connections were provided on opposite sides of the frame so that fluids could be passed through the inter-sheet **space.** A 90% aqueous glycerol solution was then passed through the assembly at a rate proportional to the thermal absorption rate. The resulting protective window was tested by exposing the coated surface to a focused 10.6-μ Co2 laser beam at ≈2.0 kW/cm2. The Teflon coating exploded clearly away within ≈0.05 second after first exposure with no further changes seen upon further exposure. The underlying Au layer continued to reflect nearly all of the incident **radiation** with the residual **heat** absorbed in the glass layer and radiant energy passing through the glass being carried away by the solution

ST laser radiation protective window; safety window laser radiation; cooling fluid laser radiation

IT Siloxanes and Silicones, uses and miscellaneous
RL: USES (Uses)
(coatings, for laser-protective windows)

IT Coating materials
(dichroic, for laser-protective windows)

IT Windows
(laser-protective coated channeled)

IT Safety **devices**
(laser-protective windows)

IT Laser radiation
(protection against, coated channeled windows for)

IT 56-81-5, uses and miscellaneous
RL: USES (Uses)

(cooling solution, in channeled coated laser-protective windows)
IT 7440-02-0, uses and miscellaneous 7440-57-5, uses and miscellaneous
RL: USES (Uses)
(in coatings for laser-protective windows)
IT 25067-11-2 25067-11-2
RL: PRP (Properties)
(in coatings for laser-protective windows)
IT **7447-40-7**, uses and miscellaneous
RL: USES (Uses)
(laser protective windows)

L65 ANSWER 63 OF 63 CAPLUS COPYRIGHT 2004 ACS on STN
AN 1914:11030 CAPLUS
DN 8:11030
OREF 8:1645e-i,1646a
ED Entered STN: 16 Dec 2001
TI Potassium chloride manufacture by the continuous process
AU Kruger, E.
SO Chemiker-Zeitung (1914), 38, 60-1,74-6
CODEN: CMKZAT; ISSN: 0009-2894
DT Journal
LA Unavailable
CC 18 (Acids, Alkalies, Salts, and Sundries)
AB The **space**, labor and time saving **devices** of this process are employed in leaching the ore and in crystallizing the salt. There are 2 general forms of leaching tanks. The first employs a worm for moving the ore through a long narrow tank through which the liquor flows in a direction opposite to that of the ore. In this way the fresh liquor meets the almost exhausted ore at the discharge end for the latter and issues at the head of the tank a short distance beyond where the ore is charged. Baffles are placed to impede the progress of the liquor and stirring **devices** for thoroughly stirring up the ore are attached to the worm usually in the form of angle pieces. Heating **devices** either in the form of radiators or applied through the hollow shaft of the worm are used for warming the liquor and the exhausted ore is removed by a kind of bucket dredge. The tanks are about 10-12 m. long. The 2nd form of leaching tank is a cast iron trough about 10 m. long, and fitted on the inside with 9 drums rotating on a common shaft. The ore is transferred to each drum in succession beginning with the 3rd by means of a belt, the ore rotating in the drums being acted upon by the liquor which flows in a counter direction to the progress of the ore. The first 2 drums serve to catch fragments of ore escaping from the others. **Radiators** for **heating** the liquor are placed between the drums and the exhausted ore is removed by the belt. The liquors are cooled in a tank 30 m. long, 2.5 m. high and 2.5 m. wide. Along the entire length runs a channel in which revolves a worm for pushing out the crystals that form. A bucket dredge at the end removes the crystals. Cooling cells are suspended in the tank at intervals, through which circulate exhausted leaching liquor and water, the liquor meeting the cells filled with exhausted liquor first and thus pre-warming the latter for its passage through the leaching tanks. The liquors enter the tank at about 90° with about 10-11% KCl and leave with 4% KCl having been cooled to 24-30° in the

interval. Another form of crystallizing tank consists of a wrought iron trough within which a hollow cylinder revolves. the cooling liquor circulating in worms within this. Spiral scrapers on the periphery of the cylinder remove the crystals as they form on the walls of the tank and deposit them where they can be removed by a bucket dredge **device.** This apparatus (10 m. long) will daily cool 300 cu. m. of liquor entering at 90° to 30° simultaneously preheating exhausted liquor to 55° for repassage through the leaching tanks.

IT **7447-40-7**, Potassium chloride
(manufacture of)

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